WEEDS TREES and TURF

NOVEMBER 1974

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If you would like specific information, write: Pennfine Perennial Ryegrass, P.O. Box 923, Minneapolis, Minnesota 55440.

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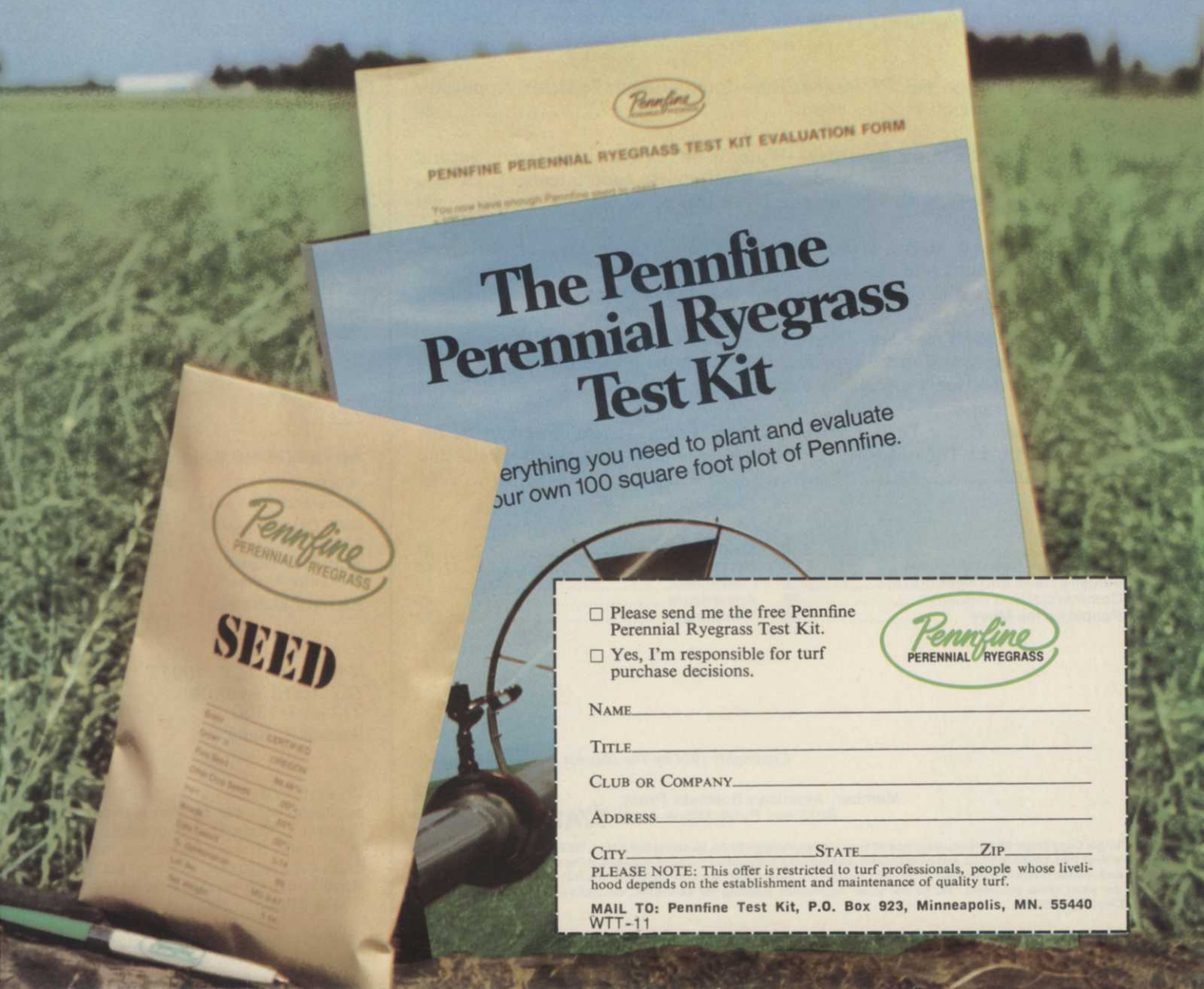
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PLEASE NOTE: This offer is restricted to turf professionals, people whose livelihood depends on the establishment and maintenance of quality turf.

MAIL TO: Pennfine Test Kit, P.O. Box 923, Minneapolis, MN. 55440

WTT-11

WEEDS TREES and TURF®

November 1974, Vol. 13, No. 11

THE COVER—Dr. William Daniel, Robert Linton and Melvin Robey stand before the newly installed P.A.T. field at Purdue University's Ross-Ade Stadium. Daniel and Robey take credit as co-inventors of the system. Linton holds exclusive rights for installation. See page 12 for related story.

P.A.T. Takes to the Field—With four installations in 1974, the Prescription Athletic Turf (PAT) system is gaining favor among players and coaches. Mud, standing water and slippery conditions will be in the past as PAT takes to the field 12

Pesticides, Politics and Professionalism—International Pesticide Applicator Association's annual meeting report 20

Water—Its Action in the Rootzone—Water is one of our most unique natural resources. It can be help or hindrance. Golf course superintendent, Donald Clemans, discusses water and its effects on turf rootzones 30

Skill, Hard Work Revive Dying Course—When Charlie Meaker purchased Rogala Public Links he was up to his neck . . . in weeds. In less than a year, Meaker repaired the equipment and put the course into playing shape ... 32

Pre-Selling Shade Tree Care—There's more to do during the cold months than repair equipment and order supplies. The telephone presell can be one of the most productive tools a treeman can use 34

Fewer Weeds, Better Drift Control—Robert Eddy, general foreman of the public works, El Toro Marine Air Station, tells how he controls weeds and chemical drift 41

Editorial	8	Meeting Dates	37
Government News/Business	10	New Products	47, 48
Industry News and Newsmakers	22	Classifieds	49
Commercial Sod Industry	28	Advertisers	49
People on the Move	33	Trimmings	50

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R65

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Just one application in early spring will control weeds for a full season. In the case of *Poa annua,* another application in late summer keeps this late germinating pest out of sight.

Don't worry about residue build-up either. Dacthal degrades in one season; it's not persistent in the soil.

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For those areas where broadleaf weeds are a problem, use Dacamine Turf herbicide to sustain your Total Turf Care. Postemergence Dacamine kills dandelion, plantain, poison ivy, knotweed and other broadleaf weeds.

Dacamine is an oil soluble diamine form of 2,4-D which is formulated to be used *only* with water. It combines the weed-killing power of an ester with the safety of an amine. Dacamine stays put—kills the weeds you spray it on but won't vaporize and damage valuable plants nearby. Its unique formulation penetrates waxy weed foliage—then moves all the way to the roots, killing the whole plant not just the top.

Daconil 2787®

Total Turf Care includes broad-spectrum disease control. Daconil 2787 is the one fungicide that solves most disease problems. Why use a group of fungicides to do what Daconil 2787 can do by itself?

Use Daconil 2787 to prevent or cure: Brown Patch, Copper Spot, Dollar Spot, Leaf Spot, Melting Out, Red Thread and more. Many leading golf courses use Daconil 2787 in their disease prevention program.

Daconil 2787 has performed well on over 25 grass species and varieties. Excellent turf tolerance allows you to use it even in hot, humid weather.

Just mix Daconil 2787 with water and spray. You don't need a surfactant. It's compatible with many commonly-used pesticides. Follow label directions for exact usage.

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Daconate is a ready-to-use arsonate liquid, pre-mixed with the right amount of surfactant for maximum coverage and control. Since it is an organic arsenic compound, it does not have the more toxic properties of inorganic arsenic compounds, such as calcium or lead arsenate. For best results, spray Daconate during warm weather when weeds are actively growing.

Ask your turf chemicals supplier for more information or write: Agricultural Chemicals Division, Diamond Shamrock Chemical Company, 1100 Superior Avenue, Cleveland, Ohio 44114.

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editorial

Men and women, if there is any doubt, are the green industry's most important resource. They serve the industry's customers, make the decisions, plot the future, operate the equipment, collect the money.

The industry is really people. They are its direction, its fuel, its achievement and image. People brought us to this point. Now, they can carry us dramatically into another era of progress and growth . . . or they can smash the whole picture into a million pieces.

Our primary worry is that many firms are not treating people with the tender loving care so needed by this valuable resource. People need understanding, support, training, direction and encouragement.

With care, people can build business and industry beyond our hopes. Without care, men and women will shortcut their jobs, deceive management and tell the customers to jump in the lake.

Most of the important factors in the gentle art of people care, in our view, fall into two general categories: training and fairness.

Training is the act of teaching an employee how to do a job right. It does not mean reading a manual, putting a worker on the job for a few days or weeks to pick up skills on his own or requiring him to attend a half-day meeting every Monday.

Training is simple teaching. If the employee knows how to do the job after being taught, then training has occurred. There is no other way training can take place.

Often of course, training is far more extensive and expensive than management ever dreamed. But, we suggest, it is far more useful than many managers have ever imagined.

The doctrine of fairness actually covers a multitude of management-employee relations. It is the act of being honest with people. It is sharing information about the business, paying a dollar for a dollar in service, supporting the growth and development of employees, rewarding successes but standing firm on failures. Fairness is giving an employee a break.

These factors are critical to our survival — in this society . . . in this industry. There is no substitute for people as a critical resource in the green industry. Let's take care of them.

When you talk SEED, you're really talking about a combination of several important characteristics.

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We experimented with the seed even further and found it adaptable to different climates and soil conditions.

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Koket's strong germination rate and seedling vigor produced a fescue that mixed well with other grasses, and proved itself exceptionally hardy—even under adverse soil conditions.

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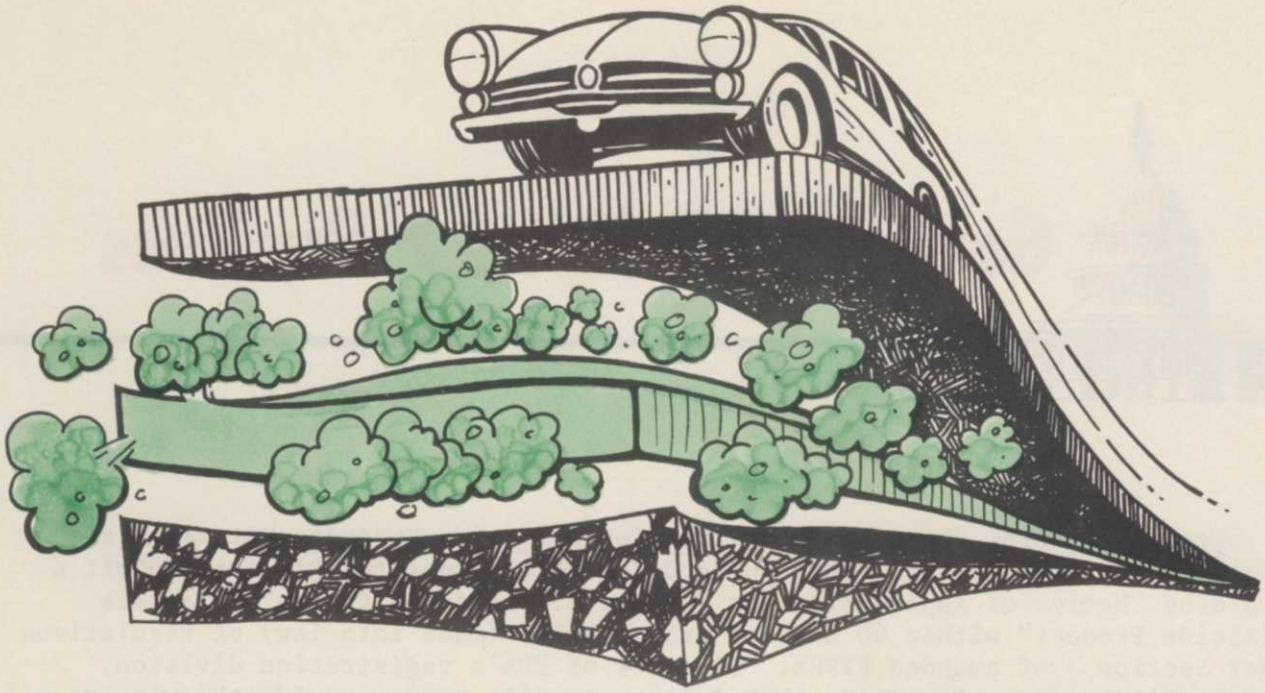

Put a "gas blanket" between you and weed breakthrough.

CASORON® – for years leader in orchard, nursery, landscaping and industrial weed control – is *now approved for use under asphalt.* Use it where weeds and roots do the most damage: recreational courts, bicycle and golf cart paths, paved sidings, airport runways, parking lots, etc.

Works like nothing you've ever used before. Applied as a granular or wettable powder over the subgrade, CASORON soon begins to emit a weed-killing gas. Once the asphalt is applied, it traps the gas creating a long time blanket and protection against weed growth and weed breakthrough.

Why CASORON instead of sterilants: Simply because you can effectively kill weeds and stop root growth without risking damage to adjacent ornamentals. CASORON is a root inhibitor, ornamental roots will stop growing as they contact the gas blanket. They won't systematically translocate the herbicide. And they won't erupt through the blanket into the asphalt. Also, CASORON's blanket of protection stops weeds from germinating – but won't sterilize areas for future planting. *Other uses:* CASORON is highly effective around right-of-ways, curbs, landscaped areas and fences. Over 60 perennial and annual weeds and grasses can be controlled.

If asphalt is in your plans for the future, specify CASORON. It's a gas. 4-4891

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Government News / Business

Persons holding State Registrations for pesticide products not registered under Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) must submit a completed "Notice of Application for Federal Registration for an Intrastate Pesticide Product" within 60 days of promulgation (made into law) of regulations under Section 3 of amended FIFRA. Director of EPA's registration division, John B. Ritch, Jr., also said, that failure to file notice would otherwise result in such pesticide products no longer being lawfully shipped after that period. Promulgation of Section 3 regulations is expected on or before December 1, 1974. First formal notice concerning intrastate pesticides appeared in the Federal Register on September 17, 1974.

New OSHA rules setting procedures for the submission and consideration of certain required changes in state plans for their job safety and health programs must contain assurances that as changes are made in federal programs, corresponding changes will be made by the states. OSHA will require state program change supplements be submitted for approval whenever alterations in the federal program could have adverse impact on the "at least as effective as" status of a state program. Examples of such changes in the federal program covered by the new rules include: promulgation or modification of standards, including emergency temporary standards; revision in enforcement policies or procedures; legislative or regulatory changes including recordkeeping and reporting requirements. The new rules became effective September 12, 1974, date of publication in the Federal Register.

Surfactant prices continue rising. ICI United States announced average price increases of seven cents per pound for more than 200 of its surfactants. Increases range from 1/2¢ per pound to 38¢ per pound, depending on the individual item.

Monsanto Company plans to build a facility to commercially produce Roundup herbicide at its Luling, La., plant site. Company officials said, completion of the multi-million-dollar unit is expected by mid-1976.

In other industry expansions; Agrico Chemical Company and Farmland Industries announced that their new 1,250-ton fertilizer plant would be located in Enid, Oklahoma. Construction is expected to begin immediately with completion in late 1976. Farmland will operate the facility under a management agreement with Agrico.

A new plant for the production of Fumazone nematicide in Magnolia, Ark., was announced by Dow Chemical U.S.A. John Weseloh, product marketing manager, said the plant will have an annual production capacity of 40 million pounds and should be in operation by January, 1976. Manufacture of Fumazone requires large amounts of bromine, which Dow already produces at Magnolia.

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With 4 Installations In '74,

P.A.T. Takes to the Field

IN THE WORDS of Purdue lineman Ralph Perretta, "It's the best field I've ever played on." The field is in Purdue's Ross-Ade Stadium (this month's cover) and it now boasts a newly installed PAT system.

PAT stands for Prescription Athletic Turf, a system emphasizing a new concept in turf drainage, particularly for football and similar playing fields — suction. In just a few short years, this system has had the turfgrass industry buzzing. This season, several major athletic installations such as Purdue are putting PAT to the test.

"After 2½ inches of rain and with rain still falling, the field was still firm. It exceeded our expectations," said Alex Agase, head football coach at Purdue University, following a full scrimmage in August, 1974.

After a second scrimmage, a Lafayette Journal & Courier sportswriter summed up the field's performance in one line: "The PAT field was nearly perfect."

Just imagine a football game on normal soil with heavy rain falling as the team begins warmups. The coach loses his game plan as the players lose traction. Groundsmen stand by helplessly even though all possible pre-game work has been done. So a sloppy game results. But what a difference PAT makes!

What is PAT?

PAT is a system which permits man to manage the rootzone in turf. Even under the most adverse weather conditions, the system permits maximum field usage. If it rains, suction pumps tied to collector pipes and slitted drains draw the water through a sandy subsurface leaving the playing field firm. As the raindrops fall, both water and air are pulled downward away from cleats, clothes and players.

Besides the drainage feature, PAT offers several other advantages. A plastic sheet between subsoil and sand helps conserve rainwater, and an automatic subsurface irrigation system triggered by moisture sensors aids turf management and maintenance. Rootzone warming by heat cables or a vented field cover on power rollers helps counteract cold weather extremes. So the players have traction, safety and freedom from mud.

Features Aid Water Control

Suction, the heart of the PAT system, is the key to success — positive, downward, instant, rapid, uniform and efficient suction.

A sprinkle, a rain, any excess moisture at the surface causes a slippery sliding interface between soil particles and thus poor traction. If it sounds "squishy" underfoot, it's obviously too wet to play.

The uniqueness of the suction principle and its effective uniformity is accomplished by diffusion through a washed sand profile. Pulling the water and air from the surface means constantly releasing water downward into sand and drains and pumps. In every test and on every field it has worked well.

In comparison, many prior improvements in turf, such as sandy profiles and vertical trenching, have been inadequate because they still become slippery at the surface when wet. In contrast, stripping rain down by suction has proved adequate. In fact, tests at one installation site showed 24 inches infiltration per hour after one season of use.

But since sand tends to be drouthy, water conservation becomes critical. A barrier of tough plastic sheeting is installed to isolate the subsoil from the compacted sand above. Moisture is held at low tension in the sand and is readily available to the roots. Now the player gets uniformity in playing conditions day after day because the conservation of rainfall or irrigation is maximized.

During the summer, an open outflow — say four to six inches above the level of the barrier — serves to hold added water to the maximum. The system conserves nutrients in dilute solution and minimizes the need for irrigation. Fortunately, above the level barrier at low moisture tension, water constantly redistributes and adjusts toward uniformity, so roots have maximum soil water supply.

An automatic subirrigation system completes the task of water control. Throughout the growing season, whenever moisture is reduced to a preset availability, a valve is opened and water recharges through the collectors and the slitted drains. When the moisture sensor becomes wet again, it automatically shuts off the irrigation. The moisture recharge is adjustable in four different ways: 1) depth of sensors, 2) spacing of sensors, 3) signal point selected on the adjustable dial and 4) recharge rate. This phase is currently being developed and standardized.

In the early days of PAT, each field tended to be overwatered by manual watering procedures, so the installation of moisture sensing completes the best of management.

PAT, Inc.

The first operating PAT model was just 10 square feet in a greenhouse in January, 1971. The initial descriptive write-up was shared with 10 turf people. Then 100 turf people were contacted during the Golf

By W. H. DANIEL, M. L. ROBEY and ROBERT LINTON

This profile model of a PAT system shows the plastic barrier, collector pipes and slitted drains.

One inch of rain fell just prior to this football game at Grand Valley. There was no mud on the field and play continued.

Course Superintendents Association meeting in February, 1971.

The patent application, filed through Purdue Research Foundation in June, 1972, list Dr. W. H. Daniel, turf specialist in agronomy at Purdue, and Melvin J. Robey, now superintendent of Purdue's athletic facilities, as co-inventors.

Daniel has been at Purdue since 1950 and has been involved in three rebuildings of the turf in Purdue's stadium and in the development of the slitted pipe by Hancor, Inc. Robey was involved in the last rebuilding of the stadium and in modifying the practice fields.

The exact specifications for each field is exclusively the responsibility of Prescription Athletic Turf, Inc., of Lansing, Michigan, with Robert Linton as general manager. This company has a national license with Purdue Research Foundation to market the system. Further, by that agreement, their claim for the system must include all features as specified. Owners can therefore be assured of installation standards and performance as specified.

The First Fields

Goshen High School, Goshen, Ind., was the first. In this economy model, only one pump is used for a 110-foot by 310-foot area in the center of the field. It took two months to install and sod, then play began two months later. At the end of the second season at Goshen, a one-inch hose was run at full stream for 30 minutes (for test purposes) in the worst low-spot and most compacted area where the band and team concentrate. With pumping all signs of added wetness disappeared in 15 minutes.

That field was used 27 times in 1972 and the turf stayed in place. In 1973, usage was expanded to 47 activities, and in 1974, the field is again seeing lots of action. Suction pumping has been used about three times a year during the playing season.

The Grand Valley State College, a new college near Grand Rapids, Mich., had extremely hard practice fields, so chose a PAT system for their playing field. The sand used was a pit run as available locally, and the field was sodded with a blend of bluegrasses. With over one inch of rain falling during a game, the field was firm and free of ponded water.

The 1974 Fields

Melvin Robey directed the building of the 63,000 square-foot PAT field in the Ross-Ade Stadium at Purdue. Excavation was 16 inches below the prior sideline grade, thus 26 inches in the center of the field. Finished grade was the same as the old sideline with only about two inches of rise in the center. The sand used was a local washed pit sand, very diverse in size, with only 26 percent pore space when compacted. The pH was above 7.7 so extra phosphorus was incorporated to allow for expected fixation.

Excavation began late March, 1974, and sodding with Warren's A-20 cultivar of Kentucky bluegrass was completed in early June. By early September, the roots were nine inches deep.

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by the

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If you are concerned with commercial turfgrass care in any way, you are welcome. Your early registration will aid planning for this major event.

Registration:

Members — $10
Non-Members — $20

Write or call:

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1827 Neil Ave.
Columbus, Ohio 43210
Tel. (614) 422-2591

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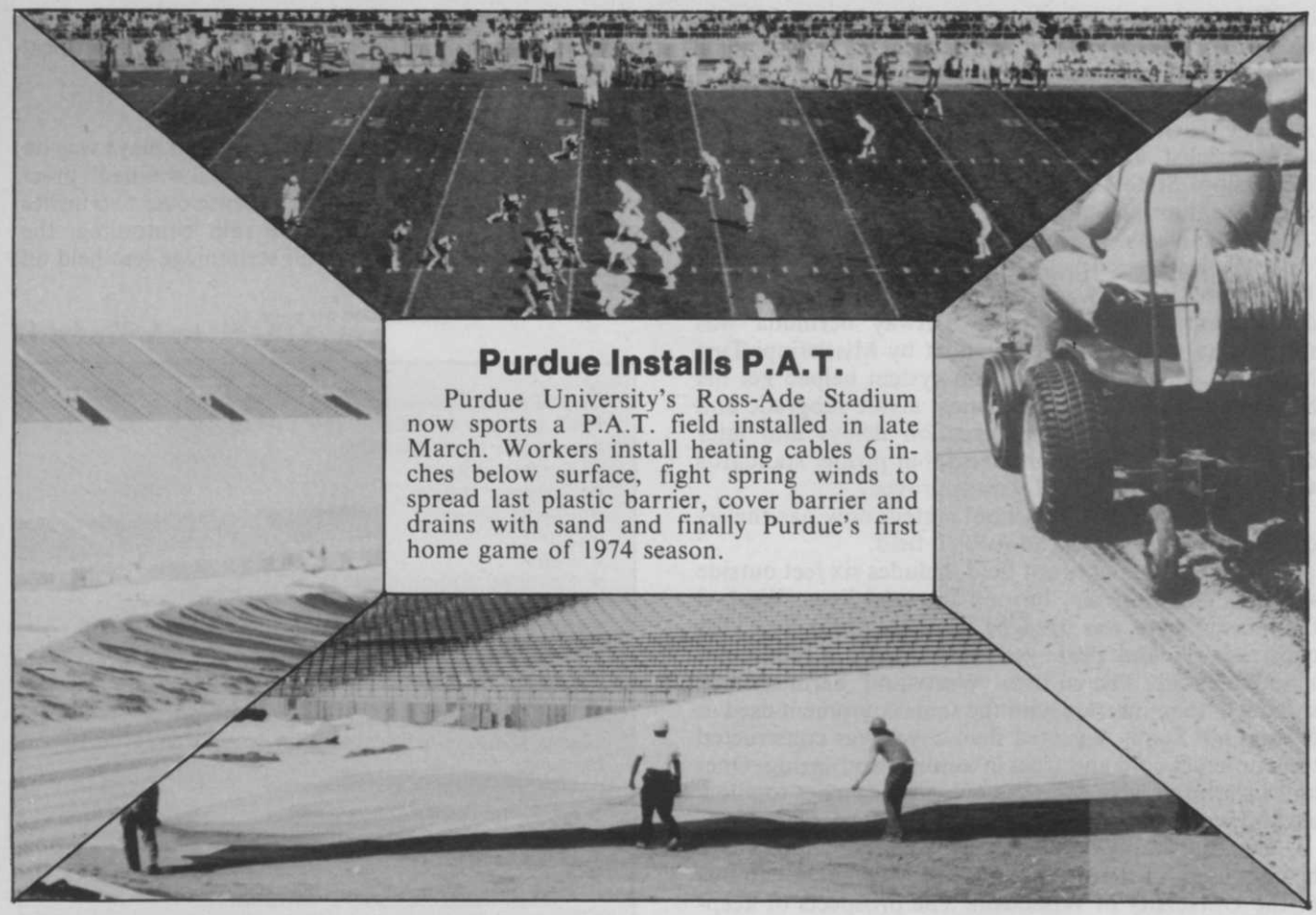

Purdue Installs P.A.T.

Purdue University's Ross-Ade Stadium now sports a P.A.T. field installed in late March. Workers install heating cables 6 inches below surface, fight spring winds to spread last plastic barrier, cover barrier and drains with sand and finally Purdue's first home game of 1974 season.

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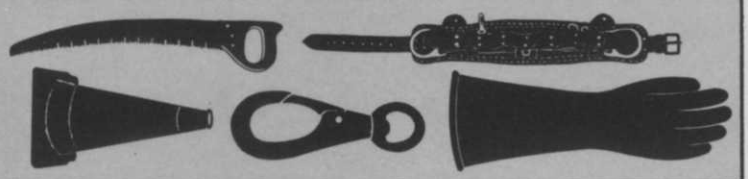

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Since a three-row sprinkler system was already in the old field, it was reinstalled and has proved very useful in sod establishment and maintenance.

Bob Linton, general manager of Prescription Athletic Turf, Inc., working with Dr. Coleman Ward, turf specialist, and Al Scoggins, facilities supervisor for Mississippi State University, developed a PAT field in Scott Stadium at Starksville, Miss.

The field was excavated to leave the final grade level with the adjacent track. The sand, dredged from the Tombigbee River, was uniform and fine, so finished depth was 18 to 20 inches. Tiftway bermuda was sprigged in with special equipment by Mississippi Turf Nurseries. A portable irrigation system helped get the bermuda started. Torrential rains, a soft subgrade and saturated sand caused construction delays and later drain tube replacement problems, but proper standards were met before the field was approved.

The Evansville, Ind., school system now has the second completed high school PAT field.

The 53,000 square-foot field includes six feet outside sidelines and four feet beyond the goal lines. Washed fine mason sand was dredged from the Ohio River for construction, and peat was mixed in by a motorized sand trap rake. The cultivar 'Westwood' bermuda was shredded, then inserted with the same equipment used at Mississippi State. A vented field cover was constructed to counteract cold and frost in autumn and spring. One-half inch holes were punched every four inches to allow air and water exchange and to make a "sweater" effect.

The fourth PAT field of 1974 construction was a heavily-used intramural field on the Milwaukee campus of the University of Wisconsin. The prospects of keeping the soil thawed, with more use during open winter days and early spring, and less mud made the PAT system the preference of those at Milwaukee for the 72,000 square-foot area. The sand used was a Lake Michigan dune sand of the finest texture available. After peat was incorporated, A-20 bluegrass was sodded.

Performance

Purdue's first squad scrimmage of 150 plays was on Sept. 4, 1974. Actually, the nearby "well-drained" practice field was too muddy for use because over two inches of rain had fallen. So with the rain continuing, the pumps were started and the full scrimmage was held on the new PAT field.

(continued on page 46)

Based on turf research and observation, a complete PAT system envisions the use of 12 elements for maximum management:

- Suction pumps
- Collector drains
- Plastic sheeting
- Sand
- Peat
- Calcined aggregates
- Slow release fertilizers
- Automatic moisture sensing
- Soil heating cables
- Vented plastic covers
- Power rollers
- Vigorous disease-resistant grasses

These 12 items in combination provide the following features:

- Uniform surface suction
- Level fields so water moves down
- Water conservation (outflow control)
- Nutrient conservation (above the plastic)
- Automatic subsurface watering
- Porous rootzone (ample air at roots)
- Heat addition (keep soil thawed)
- Heat conservation (reduces frost action)
- Wear resistance (increase growth)

Excess water is placed on a PAT field by a one inch hose.

All water is pulled away by pumps and gravity within 10 minutes.

For More Details On Following Page Circle (112) On Reply Card

TORO®

You're looking at a team of Toro greens maintenance machines. It's called Greensmaster 3, and it's a triplex greensmower that also spikes and thatches greens. As a greensmower, the cutting heads float free of the traction unit and grass baskets for uniform cutting height – it still has no equal. And now, with Toro-engineered implements, it's equally effective as a spiker or thatcher. Your Toro distributor offers our new one year warranty–and a free trial on your own greens. Call him. Soon.

Toro is an exclusive trademark of The Toro Company, Bloomington, Minnesota. Printed in U.S.A.

Uniform cut for consistent look and playability
Less surface compaction, more new growth from spiking
Less buildup, healthier greens from thatching

IBDU works 'til

Most slow release fertilizers depend on temperature. The hotter it gets, the faster they release. And when it gets cold, they stop.

In fact they start slowing down as bacterial activity slackens—when the temperature falls below 80°F. Winter starts for them long before the leaves fall.

IBDU is activated by water. As long as there is unfrozen moisture in the soil, IBDU is releasing nitrogen. At 40°F. the

LOCAL PAR EX DISTRIBUTORS

Foster-Gardner Inc.
Coachella, Cal.
(714/398-4591)

Swift Chemical Co.
Los Angeles, Cal.
(213/264-5800)

Northern Cal. Fert. Co.
San Jose, Cal.
(408/292-7957)

Agri-Turf Supplies
Santa Barbara, Cal.
(805/963-3691)

Avon Cider Mill
Avon, Conn.
(203/677-0343)

McMullen Feed Store
Clearwater, Fla.
(813/446-5961)

Swift Chemical Co.
Winter Haven, Fla.
(813/293-3147)

Swift Chemical Co.
Atlanta, Ga.
(404/432-5582)

M. J. Meyers & Sons
Aurora, Ill.
(312/898-7700)

Leon Short & Sons
East Peoria, Ill.
(309/694-1493)

Swift Chemical Co.
E. St. Louis, Ill.
(618/271-5650)

Turf Mgmt. Supplies
Rockton, Ill.
(815/624-7578)

Clauss Bros., Inc.
Roselle, Ill.
(312/529-2502)

Paarlberg Chemical
S. Holland, Ill.
(312/474-3086)

Siemer Milling Co.
Teutopolis, Ill.
(217/857-3131)

Turf Products, Ltd.
Wheaton, Ill.
(312/668-5537)

Deisch-Benham, Inc.
Nappanee, Ind.
(219/773-7781)

Indiana Seed Co.
Noblesville, Ind.
(317/773-5813)

Tri-State Toro Co.
Davenport, Ia.
(319/326-4416)

Geo. W. Hill & Co.
Florence, Ky.
(606/371-8423)

Cornell Chemical & Equip.
Baltimore, Md.
(301/247-1525)

Swift Chemical Co.
Glen Burnie, Md.
(301/760-5927)

R. F. Morse & Son
Wareham, Mass.
(617/295-1553)

L. E. Chemical, Inc.
Royal Oak, Mich.
(313/398-3636)

Ferguson's Lawn Equip.
Traverse City, Mich.
(616/946-2440)

Minnesota Turf Supply
St. Paul, Minn.
(612/454-3106)

Swift Chemical Co.
Jackson, Miss.
(601/366-7321)

Champion Turf. Equip.
Kansas City, Mo.
(816/333-8000)

earth freezes over.

release rate for IBDU is only 25% slower than at 80°F. So your turf gets a steady meal whether it's hot or cold.

When the winter freeze sets in, your turf will still be thick and green. And the IBDU will be ready to start feeding at the first thaw of spring.

IBDU. It works longer to make your grass greener.

Fox Vehicles
St. Louis, Mo.
(314/726-3260)

Big Bear Equip.
Omaha, Neb.
(402/331-0200)

Terre Co. of N. J., Inc.
Saddlebrook, N. J.
(201/843-6655)

Wagner Seed Co.
Farmingdale, N. Y.
(516/293-2920)

Eastern Turf Equip.
Fayetteville, N. C.
(919/483-0179)

Swift Chemical Co.
Wilmington, N. C.
(919/799-4490)

Sidney L. Dryfoos Co.
Cleveland, Ohio
(216/439-4363)

Wait Mftg. & Marine
Tulsa, Okla.
(918/584-3334)

Lawn & Golf Supply Co.
Phoenixville, Pa.
(215/933-5801)

Equip. Sales & Serv.
Warrendale, Pa.
(412/776-1916)

Allen's Seed Store
Slocum, R. I.
(401/294-2722)

Swift Chemical Co.
Houston, Tex.
(713/864-4496)

Reinders Bros., Inc.
Elm Grove, Wis.
(414/786-3300)

Turf Mgmt. Supplies
Sun Prairie, Wis.
(608/837-5598)

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Address_____

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PROFESSIONAL PRODUCTS

Swift Chemical Company,
An Estech Company
111 West Jackson Blvd.
Chicago, Illinois 60604

I.P.A.A. Meeting Report

Pesticides, Politics and Professionalism

PROFESSIONALS. A title applied to members of the traditional professions: medicine, law and the ministry. They are involved in a code of ethics, a way of life and a constant, positive input for their profession and its institutions. Literally, they qualify as professionals because they are members of a profession.

But what about the industries of the Green Industry? Do they qualify on the same level as the traditional professions?

The International Pesticide Applicators Association (IPAA) is one Green Industry organization trying to reach those lofty standards. At their annual meeting September 18-21, in Seattle, Washington, discussions centered on professionalism, political strength and educational improvement.

Host for this year's program was the Washington Chapter of IPAA. Wednesday the host sponsored a tour of local businesses including Washington Spray Service, Eastside Spraying Service and a few local landmarks.

Persons attending the tour were treated to firsthand examinations of some custom equipment. Don Mock, past president of IPAA, demonstrated original design equipment at Washington's main office. Mock described the workings of a manually-operated lawn pesticide applicator. It combined a speed-of-travel indicator, controlled tip spacing and size and a pressure gauge — all the components necessary for accurate chemical application. John Beheyet, owner of Eastside, also demonstrated his unique proportioning spray rig.

Keynote speaker for the meeting was Erret Deck, assistant director, Alaska Department of Agriculture. He discussed current label and product certification regulations and how they would affect the pesticide applicator. After a short history of government controls and legislation applying to pesticide application, Deck pointed out that uses inconsistent with the label would have to be more hazardous than those listed on the label or uses in or around the home as long as the rate and timing followed the label. Retention of state flexibility in certification programs was also a major point in his presentation. A total program for licensing dealers, applicators and consultants should be left in control of the states, he said. Deck's presentation was followed by a lengthy question and answer period.

Dean Jamieson, vector control specialist, Santa Clara City Health Department, discussed pathogens, predators and parasites. Jamieson presented statistics on worldwide biological insect control. He said there have been 20 cases of complete or substantial control in the United States, with three of those resulting in complete control.

Improving and maintaining employee relations was the topic of after-lunch speaker, Lyman Gies. "Once you've defined the problem you have it half solved," he said. And in order to solve most human relation problems, he suggested that you first identify the problem, analyze it, generalize and then take a projected course of action.

Insect life cycles was the topic of Lee Campbell's talk on Thursday afternoon. "Know the life history of the insect you want to spray; the egg hatch, flight period and the larval stage," he said. Campbell suggested that the time to spray is not exactly when the damage is being done. Determine when the most vulnerable period in the life cycle of the insect is and then spray accordingly, he said. He talked of selling spray schedules to customers and said don't sell spray, sell service.

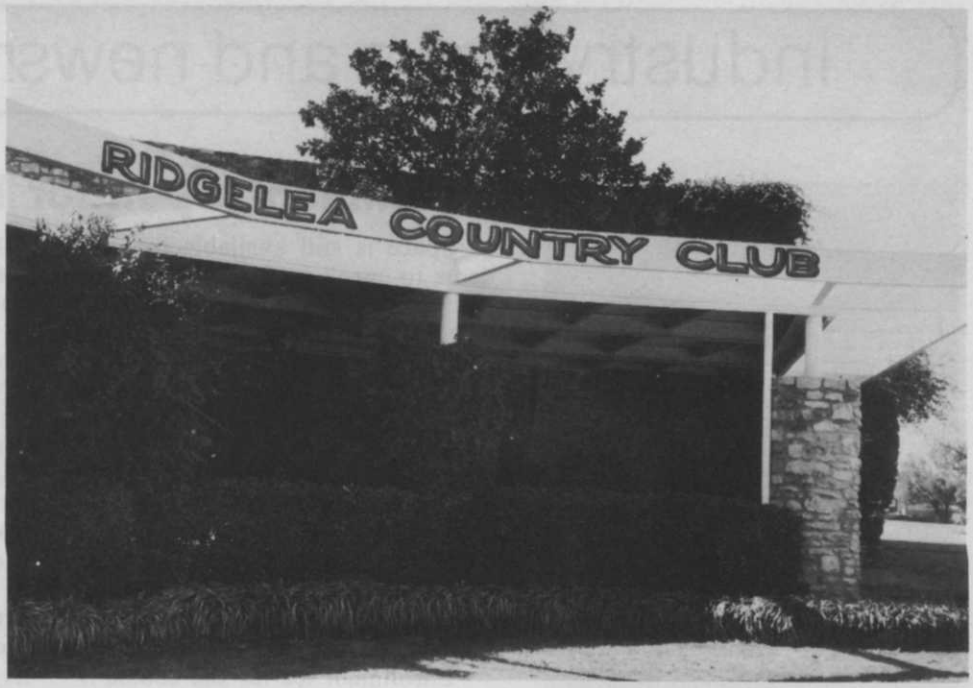
C. Howard Rice, Dean Witter Co., discussed investments and tax shelters. He reviewed the pros and cons of common stocks, preferred stocks and bonds. Rice emphasized municipal bonds, saying "there has never been a failure to pay a municipal bond in the state of Washington."

Friday's education program started with an interesting and entertaining in-basket exercise. Rod Fairbanks, Fairbanks Spray Service, distributed lists of typical complaints, problems and compliments possibly experienced by an business manager. Conference

(continued on page 31)

John Beheyt, owner of Eastside Spray Service, Kirkland, Wash., demonstrates his pressure-compensated, proportional-mixing spray rig.

Chuck and Carol Seibold, (left), Major Spray Service, Portland, Ore. Chuck is program chairman for the 1975 International Convention. I.P.A.A.'s new president, Gary Mulkey, Mulkey's Spray Service, Eugene, Ore., is also president of the Oregon Chapter.



Ridgelea Country Club, Ft. Worth, Texas

With a famous reputation at stake...Jobe's is trusted to feed the trees.

Bellingrath Gardens, Mobile, Ala.

Good looking, healthy trees are important at Bellingrath Gardens near Mobile and Ridgelea Country Club in Ft. Worth. That's why these famous places rely on Jobe's Tree Food Spikes.

Jobe's Tree Food Spikes are produced under a patented process. Fertilizer is compressed into the shape of a railroad spike. All you do is hammer Jobe's into the ground; soil moisture does the rest. Trees and shrubs can be fertilized in one fourth the usual time and about half the normal cost.

University tests have proven Jobe's are as effective as other tree feeding methods, plus being quicker and less expensive. Average cost is 29¢ per spike*. Time required to feed a 5" tree is just 5 minutes. Use one spike per inch of trunk diameter.

Why don't you give Jobe's Tree Food Spikes a try? A lot of very famous places do! Order from your supplier or order direct: 5 cases @ $30 per case, 15 cases @ $25 per case, freight prepaid.

*Based on 5 case order.

Jobe's®
TREE FOOD SPIKES
Makes tree feeding easier

Dept. W, 462 East High St., Lexington, Ky. 40508

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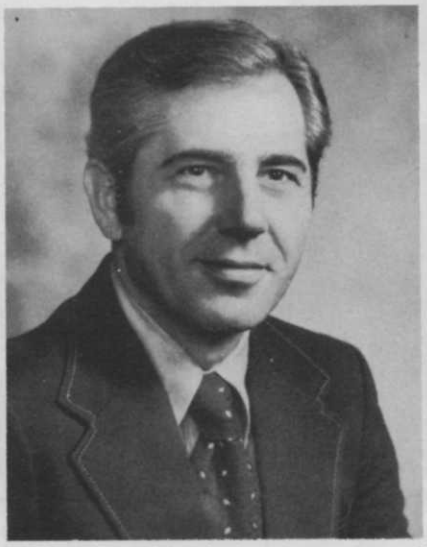


William R. Michaels has been named president of Lockwood Corporation, a wholly owned subsidiary of Alaska Interstate Company. The company is a leading manufacturer of center pivot irrigation systems and specialized farm equipment, headquartered in Gering, Neb.

Herbicide Antidote Gains Recognition for Stauffer

A herbicide antidote developed by Stauffer Chemical Company has been recognized as one of the 100 most significant new technical products of 1974 in the "I-R 100" competition, sponsored by Industrial Research magazine.

President H. B. Morley accepted the award for Stauffer at an awards banquet at the Museum of Science and Technology in Chicago, Sept. 19.

Herbicide antidotes have been viewed as a major breakthrough in weed science by leading university agricultural authorities. The antidotes are chemical agents that are used in combination with thiocarbamate herbicides and permit application rates sufficiently high enough to control difficult weed species without damaging crops.

Stauffer's first commercial herbicide antidote, R-25788, is being marketed in combination with Eptam® and is called Eradicane®, and in combination with Sutan®, called Sutan®+.

Enrollment Open for Irrigation Course

Space is still available for students to enroll in a three-day short course on Turf Irrigation Principles and Practices to be held in Fresno, Calif., on Dec. 10-12 at the Airport Marina Motel. The course is sponsored by the Sprinkler Irrigation Association.

Instruction material in the course is not of an advanced nature but will begin with the basic concepts of sprinkler irrigation and cover design and application through lectures, examples and problem-solving techniques.

Enrollment fee for the course is $125 per student which includes participation in all sessions, luncheons each day and provision of copies of the *Third Edition of Sprinkler Irrigation,* the *Supplement to the Third Edition,* and the *ABC's of Lawn Sprinkler Systems,* as well as other materials provided by the instructors.

Enrollment in the course is limited to 50 students. Applications are accepted on a first-come, first-served basis. Those completing the short course will receive a special certificate from the Sprinkler Irrigation Association stating that the individual has attended and participated in a course covering basic sprinkler irrigation theory, technique and system design.

Instructors for the course include Dr. Falih K. Aljibury, University of California; Jerry L. Boesel and David Davis, Rain Bird Sprinkler Mfg. Corp.; William Closter, Closter Brothers, Inc.; Del Crummey and Purnell Thomas, FMC Corp.; and Edric Green, Moody Sprinkler Co.

Full programs and registration forms are available from the Sprinkler Irrigation Association at its national offices at 13975 Connecticut Ave., Suite 310, Silver Spring, Md. 20906.

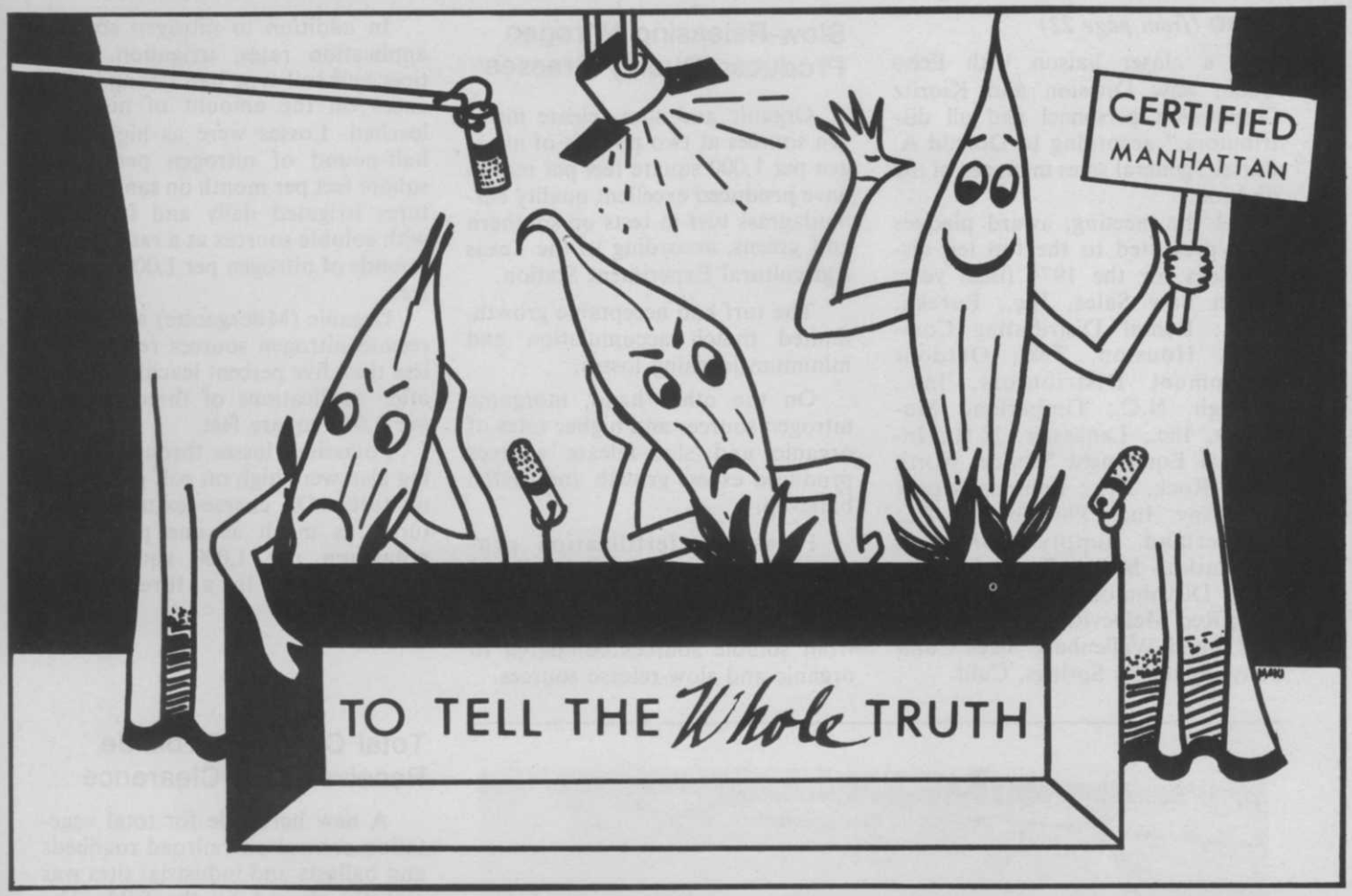
Echo Chain Saw Division Hosts Distributor Meeting

The Echo Chain Saw Division, Kioritz Corporation of America, recently hosted more than 75 chain saw "enthusiasts" at the firm's first national distributors meeting.

Held in Northbrook, Ill., the three-day event was staged to "pro-

(continued on page 24)

The Midwest Agricultural Chemicals Association, Inc. elected new board of directors and officers for the 1974-75 year. Seated (left to right): Dean Roy, Cole Chemical Co., second vice-president; Ray Smedul, Chevron Chemical Co., president; Gene Neuwirth, Shell Chemical Co., first vice-president; and R. C. (Bud) Moreau, Velsicol Chemical Co., secretary-treasurer. Standing: Dick Carritt, retiring board member, P.P.G. Industries; Tom Foster, Guth Corp.; Ray Dreger, Mobil Chemical Co.; Larry Bert, Midwest Agricultural Warehouse Co.; Keith Boyer, Brayton Chemical Co., past president; S. E. Cook, Hercules, Inc.; and Swede Roskam, Oil-Dri Corp. of America.



WILL THE REAL MANHATTAN RYEGRASS, PLEASE STAND UP!

Manhattan perennial ryegrass is a fine textured perennial ryegrass developed by Dr. Reed Funk, Rutgers University. This new, improved, fine textured grass is genetically pure and great care is taken by Manhattan Association growers who plant only foundation seed stock. The seed is produced by members of the Manhattan Ryegrass Growers Association who agree to strict rules of growing, to protect the crop from cross-pollination and other contaminants.

The seed produced by these growers is closely watched and both field certification and seed certification are required before the seed is released to you, the customer.

Any seed bearing the name "Manhattan" but which does not carry certification tags may not be truly Manhattan. The variance could be drastically untrue of variety.

For your protection — buy only Certified Manhattan; why take a chance on imitations?

THE Manhattan®

"TURF TYPE"
PERENNIAL RYEGRASS

Certified Manhattan is grown by the
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Exclusive Marketing Agents
WHITNEY-DICKINSON SEEDS, Inc.
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For More Details Circle (145) on Reply Card

ECHO *(from page 22)*

vide a closer liaison with Echo Chain Saw Division and Kioritz Corporation personnel and all distributors," according to Donald A. Bartelt, general sales manager of the division.

At the meeting, award plaques were presented to the top ten distributors for the 1974 fiscal year: Chain Saw Sales, Inc., Eureka, Calif.; Rental Distributing Company, Houston, Tex.; Outdoor Equipment Distributors, Inc., Raleigh, N.C.; Timberland Machines, Inc., Lancaster, N.H.; Industrial Equipment Service, North Little Rock, Ark.; Lummis Supply Company, Inc., Philadelphia, Pa.; Timberland Supply Company, Kosciusko, Miss.; Brown Equipment Distributors, Inc., Corydon, Ind.; Red McDevitt, Inc., Syracuse, N.Y.; and Wallenberg Sales Company, Santa Fe Springs, Calif.

Slow-Releasing Nitrogen Producss Quality Grasses

Organic and slow-release nitrogen sources at two pounds of nitrogen per 1,000 square feet per month have produced excellent quality bermudagrass turf in tests on southern golf greens, according to the Texas Agricultural Experiment Station.

The turf had acceptable growth, limited thatch accumulation and minimum leaching losses.

On the other hand, inorganic nitrogen sources and higher rates of organic and slow-release sources produced excess growth and thatch build-up.

Potassium fertilization produced no measurable effect on turf quality or thatch. Nitrogen losses through leaching were very high from soluble sources compared to organic and slow-release sources.

In addition to nitrogen source, application rates, irrigation practices and soil type had strong influences on the amount of nitrogen leached. Losses were as high as a half-pound of nitrogen per 1,000 square feet per month on sandy mixtures irrigated daily and fertilized with soluble sources at a rate of two pounds of nitrogen per 1,000 square feet.

Organic (Milorganite) and slow-release nitrogen sources resulted in less than five percent leaching losses after applications of three pounds per 1,000 square feet.

Potassium losses through leaching also were high on golf green soil mixtures. On coarse-textured mixtures, as much as one pound of potassium per 1,000 square feet leached away in a three-month period.

David T. McLaughlin, president of The Toro Company, holds a rendering of Toro's new assembly plant being built in Tomah, Wisc.

Toro Breaks Ground for Wisconsin Plant

State and community representatives gathered in Tomah, Wisc., for a groundbreaking ceremony for The Toro Company's $3.5 million assembly plant.

During the ceremony, which took place on 7,500 square feet of fresh sod laid in the shape of a map of Wisconsin, Governor Patrick J. Lucey, Tomah Mayor C. E. Bean and Toro President David T. McLaughlin each operated a Toro mower to cut a swath in the blue Merion grass.

The new plant, Toro's first in Wisconsin, will be a single story steel and masonry structure with 160,000 square feet of space. Scheduled for completion late next year, it will provide employment for 350 men and women by 1976. Toro, headquartered in Minneapolis, Minn., is the nation's leading independent manufacturer of maintenance and irrigation equipment for lawn and turf care.

Total Control Herbicide Receives EPA Clearance

A new herbicide for total vegetation control on railroad roadbeds and ballasts and industrial sites was recently cleared by the EPA. The product will be marketed under the trade name, Spike®, by Elanco Products Company, Indianapolis, Ind.

The new chemical, a thiadiazolylurea compound, was field developed by the Lilly Research Laboratories, a division of Eli Lilly and Company, also of Indianapolis.

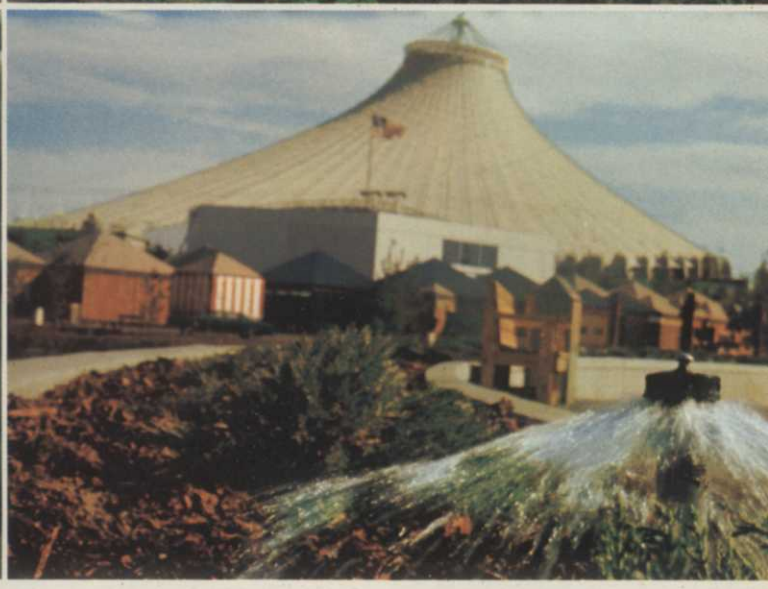
The new chemical was widely tested for four years on over 100 commercial-size railroad sites and many large industrial locations under an experimental permit granted by EPA. Features of Spike, according to the manufacturer, include control of more species of tough weeds and most brush species, long-lasting residual control, application timing flexibility, and resistance to leaching and lateral movement in the soil.

Elanco marketers indicate that Spike is now available for commercial use. Additional experimental testing of the product is now underway for control of woody plants in pastures and rangelands.

For more information, contact: Specialty and Technical Chemicals Department, Elanco Products Company, Indianapolis, Ind.

Expo '74.
From solid rock to garden showplace in eight months.

TORO®



TORO sprinkler systems.
Only way to go when the growing gets tough.

A year ago the 1974 World's Fair was a landscape architect's nightmare. A blighted area of down-and-out train depots and gaping warehouses. . . . 53 acres of solid rock and ruin.

The challenge? Turn it into an international environmental showplace. One that would live up to the Expo '74 theme: "Celebrating Tomorrow's Fresh, New Environment."

The transformation took over 2000 trees, countless plants, tons of top soil . . . and a TORO sprinkler system.

Faced with potentially serious soil erosion conditions, TORO experts designed a system flexible enough to accommodate every imaginable type of terrain and vegetation, day-and-night crowds of visitors, and the capricious Spokane weather. In less than four months, we installed 2600 Stream Rotor and other sprinkler heads, three miles of pipe, 20 controllers and 160 valves . . . all from the same fine TORO product line that America's top golf courses have used for years.

The results at Expo '74 speak beautifully for themselves . . . in any language. Now if a TORO system can work that kind of magic for 53 acres of solid rock, just imagine what it could do for your next job!

Then write for facts and details beyond your wildest imaginings. TORO Irrigation Division, Dept. W-1174, P.O. Box 489, Riverside, Calif. 92502.

For More Details Circle (111) on Reply Card

Ground keepe

Rotary cutters.
Four different models. 60"-72" cut widths. For mowing hilly estates, slicing tall, tough weeds, saplings and rugged brush.

Internati

International®... the mowing man's one-stop supermarket.

And variety doesn't stop with our mowers. Look at all the ways you can go with the sleek, ground-hugging 2400B LO-BOY TRACTOR: Hydrostatic, mechanical or hydraulically-actuated transmissions. Diesel or gas engines at 46-53 hp (net IEMC). 2400B also available in standard height model.

You decide. The right mower. The right tractor. International makes both to work smoothly as one unit. Try us and see for yourself.

Flail mower.
84" cut width. Ninety extra-heavy-duty blades cut and pulverize tough weeds and tall grass. Residue is broadcast evenly without windrows.

Cutter bar mowers.
5, 6, 7, 9-ft. widths. Mechanical or hydraulic drive. Ultra-fast, short-stroke action for high-speed mowing along highways. Can team with rear mounted equipment.

2500B tractor.
A big brother to the 2400B. Hydraulic, mechanical or hydraulically-actuated transmissions. Gas or diesel engines. 59-70 hp (net IEMC).

It's them. Or us. IH®

There are many companies making industrial equipment. Some have entries in many product categories. Others specialize in one category. However, only International has a machine in almost every category that's either a product leader or a competitive equal. So no matter what other make you're looking at, International gives you one very important choice. It's them. Or us.

PAY LINE DIVISION OF INTERNATIONAL HARVESTER

Regional Turfgrass Conferences To Feature Education and Equipment

MIDWEST:

THE OHIO TURFGRASS Conference and Show, a regional Midwest show devoted strictly to turf and turfgrass maintenance, will be held Dec. 3-5 in Columbus, Ohio.

Headquarters for the educational sessions and exhibits will be in the Franklin County Veterans' Memorial Building, with lodging available in several downtown Columbus hotels.

The educational program will include outstanding speakers from several states. In addition to many general sessions and lectures, split sessions will be held on various topics of interest — golf courses, schools and athletic fields, lawns and general grounds, cemeteries, and sod production.

"Energy and the Turf Industry," a general session concluding the educational program, will include speakers on fertilizer availability, an outlook on equipment and materials, practical turf management with reduced supplies, the effects of the energy crisis on the use of recreational facilities and a panel discussion.

Social activities include the Ohio Turfgrass Foundation banquet during which the Ohio Turfgrass Foundation Man of the Year Award, several Professional Excellence Awards, and about ten Ohio Turfgrass Foundation scholarships will be presented.

Attendance of about 1,100 to 1,200 is expected, along with some 60 to 65 exhibitors. Last year's conference in Cincinnati, Ohio, drew 1,102 participants from 24 states and Canada.

Attendance is open to anyone interested in turfgrass management. For more information, contact David P. Martin, Executive Secretary, Ohio Turfgrass Foundation, 1827 Neil Avenue, Columbus, Ohio 43210.

Turfgrass conferences offer the turf manager an opportunity to see what's new in equipment and supplies.

NORTHEAST:

NEW JERSEY TURFGRASS Expo '74, first of its kind for the state, is generating lots of interest and excitement in the New Jersey turfgrass industry.

This new venture, a combined educational conference and trade show, is sponsored by Cook College of Rutgers University and the New Jersey Turfgrass Association.

Turfgrass Expo '74 will provide a "new look" for the traditional turfgrass conference held annually in January. This new look will include a new name, new date, new location, new facilities and, most importantly, many new activities.

Beginning Dec. 2 with the Expo Golf Tournament at the Ramblewood Country Club, Marlton, N.J., the next three days (through Dec. 5) are heavily programmed with educational sessions and a trade show. Headquarters for Expo '74 are at the Sheraton Poste Inn, Cherry Hill, N.J.

The educational program, under the chairmanship of Dr. Ralph E. Engel, research professor, Cook College, includes a wide variety of topics and many highly qualified turfgrass experts, and is designed to cover a broad range of turfgrass interests. The educational program will conclude on Dec. 5 with workshop sessions of four major subjects — sprayer and spreader calibration; mower maintenance; trouble shooting small pumps and sprayers; and maintenance and failures of pumps, valves and automatic switches.

A turfgrass equipment and product show, a major new attraction, will complement the educational sessions.

Highlighting the social activities will be the Expo Banquet on Dec. 4. Planned as a "night of awards, recognition, sociability and fun," the banquet will include scholarship presentations and the golf tournament trophies and prizes. Election into the New Jersey Turfgrass Hall of Fame will recognize one individual who has made significant contributions for the betterment of the New Jersey Turfgrass industry. This Hall of Fame award is being instituted at the Turfgrass Expo '74 as an annual event.

These new and expanded activities of the New Jersey Turfgrass Expo '74 will provide increased opportunities for keeping abreast of new technological developments in all aspects of the turfgrass industry as well as contact with individuals associated with the various segments of the turfgrass industry.

Additional information about New Jersey Turfgrass Expo '74 can be obtained from Dr. Henry W. Indyk, Expo General Chairman, Cook College-Rutgers University, Box 231, New Brunswick, N.J. 08903.

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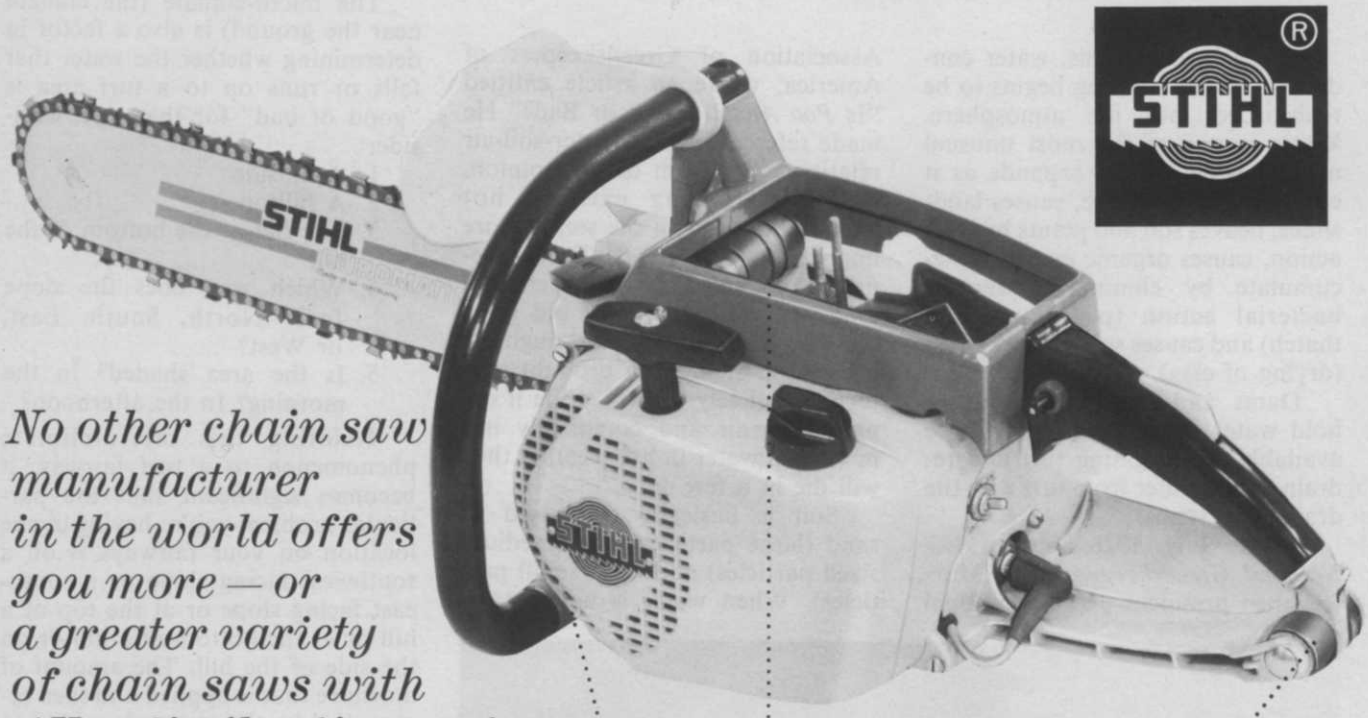

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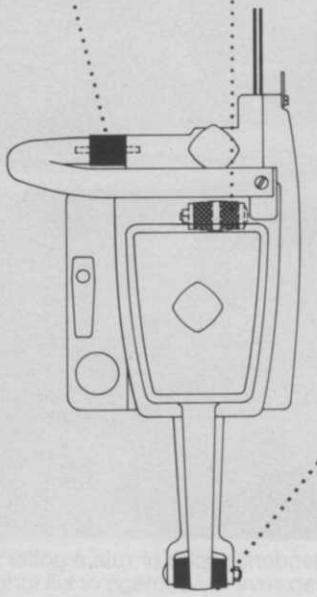

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WATER ITS ACTION IN THE ROOT ZONE

By DONALD A. CLEMANS
Golf Course Superintendent, Cody, Wyoming

As each day begins, water condensed as dew and fog begins to be reabsorbed into the atmosphere. Water is one of the most unusual natural resources. It expands as it cools and becomes ice, causes landslides, heaves soil and plants by frost action, causes organic matter to accumulate by eliminating aerobic bacterial action (peat bogs and thatch) and causes soil to crack open (drying of clay).

Dams and ponds are built to hold water in reserve so it will be available for irrigating turf and redrain excess water from turf with tile drainage systems.

In the July, 1926 issue of *The National Greenskeeper*, John Morley, then president of The National Association of Greenskeepers of America, wrote an article entitled "Is *Poa Annua* Good or Bad?" He made reference to the water-soil-air relationship: "I am of the opinion, especially during extreme hot weather, that air in the soil is more important than water. For if deprived of water in hot weather for a long period the roots of old grass will frequently survive, although the leaves and stems in a drought may turn completely brown, while if deprived of air and completely immersed in water in hot weather they will die in a few days."

Soil is basically composed of sand (large particles), silt (medium sized particles) and clay (small particles). When water is added to a soil, three of the possible conditions produced are:

1. Saturated Soil (too much water and devoid of air)
2. Field Capacity Soil (desirable balance of soil particles, air spaces, and water)
3. Wilting Point Soil (soil with too little water which is held too tightly to the soil particles to be available to plants)

The condition of the soil that is being wetted affects this relationship. That is, granular soil has good movement of soil, water and air, while compacted or platy soil has poor movement of water and air.

The micro-climate (the climate near the ground) is also a factor in determining whether the water that falls or runs on to a turf area is "good or bad" for that turf. Consider:

1. A hillside
2. A hilltop
3. The flat at the bottom of the hill
4. Which way does the slope face? North, South, East, or West?
5. Is the area shaded? In the morning? In the afternoon?

Relating this micro-climate phenomenon to a turf fairway, it becomes significant that the particular problem you're having in one location on your fairways is on a southwest facing slope or a southeast facing slope or at the top of a hill or at the bottom of a hill or on the side of the hill. The amount of moisture that is applied and then reabsorbed by the atmosphere due to the direction which it faces, is a significant response and reaction to the micro-climate. And thinking in terms of micro-climate the significance is maybe a key to the solution to one of your problems.

Most golf courses in the midwest and many in other parts of the country are 40 or 50 years old. Every 5 or 6 years in the last 20 years or 30 years a way has been found to decrease the height of cut and increase the playability of the turf and still using basically the same turfgrasses originally started with. Kentucky bluegrasses, the bentgrasses and some of the hybrid bermudas used in the South are different, but basically the height of cut has drastically been reduced in the last 50 years.

(continued on page 45)

Water on a golf course can dampen a superintendent's spirit or ruin a golfer's game. Large amounts of standing water such as this can severely damage or kill turfgrass by suffocating the roots.

IPAA (from page 20)

attendees were than asked to write-out their solutions and later discuss them with the rest of the group. The impromptu session proved there may be more than one solution to individual problems.

"If all else fails, read the instructions," said Art Kain, Seattle Community College, as he discussed the proper preventive maintenance for equipment. Kain discussed several practical steps for winterizing gasoline engines and continuing maintenance schedules common to most equipment.

Don Mock, past-president of I.P.A.A., discussed what he determined to be the most important factors of spray applications; tip size, spacing, pressure and rate of travel. Mock also reviewed a spray chart and explained the advantages to using the chart and how it can work for a sprayer.

A rap panel discussion featuring Don Mock, Roy Goss, Dean Jamieson, Gary Mulkey, Don Nicklebrink, Lee Campbell and John Beyehet drew many questions from the audience. The emcee was Don Mock.

Dr. Roy Goss entitled his talk 'Fertility and other practices that effect turf grass disease development.' He discussed the cause of diseases in relation to the level of nutrition and the balance that exists between disease and fertilizer application.

A nation-wide survey conducted by Bill Owen, General Spray Service, provided information for his talk on 'Application Techniques'. Owen discovered that all spraying services polled had at least some training program for their employees. He averaged truck size, tank size, gallons sprayed per day, costs, daily gross per truck and crew size of each business. Management, said Owen, makes money for your business. A manager who plans and organizes can free the owner/boss for more public relations work and higher level decision-making, he said.

I.P.A.A. officers for 1974-75 are Gary Mulkey, Junction City, Oregon, president; Rod Fairbanks, Seattle, Washington, vice president; George Harrison, Seattle, Washington, treasurer and Larry Costello, Seattle, executive secretary.

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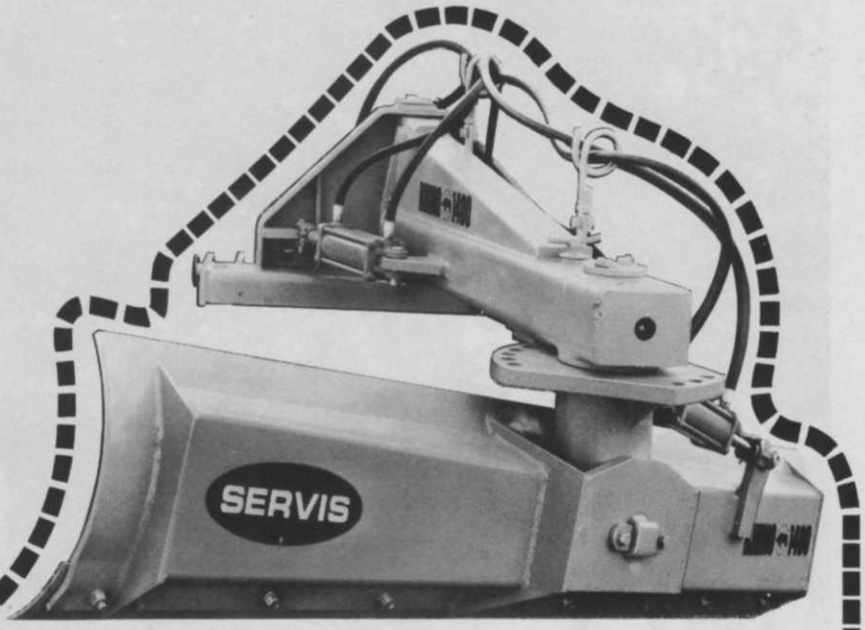

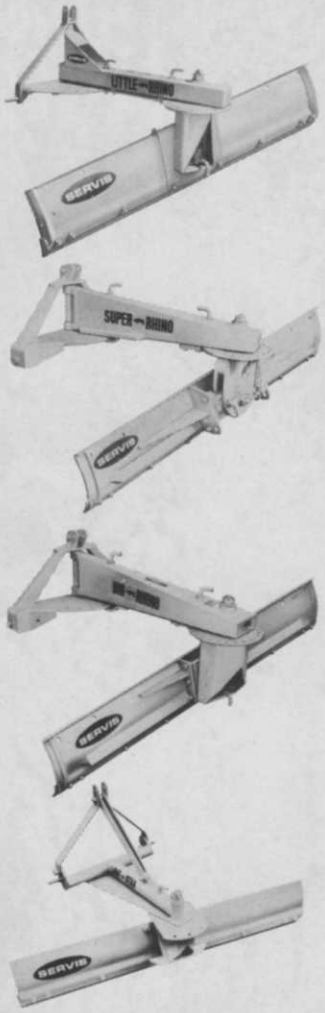

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WT 11

Skill, Hard Work Revive Dying Course

DESERTED FOR two years and looking like anything but a golf course, Rogala Public Links challenged anyone to put it back into playing condition.

Answering the challenge was Charlie Meaker.

"I had heard about the course a year ago, but I had not looked at it until December, 1973," Meaker said.

"At that time the fairways were a 2½ foot mixture of bluegrass, brome and weeds. The greens were Penncross and averaging about 1½ feet in height," he said.

But in spite of the course's rough appearance, Meaker was able to see potential under the matted grass and crust of snow, and decided to buy Rogala.

The papers were signed in March, 1974, and Rogala had an owner. Meaker moved into the deteriorated clubhouse of this Mattoon, Ill., course and began the arduous task of readying the equipment and facilities for business.

On weekends, wife Donna and children Nancy, 10, Karen, 7, and Joe, 2, made the pilgrimage down from Bloomington, Ill., to add helping hands to the project. While Donna and the girls turned their attention to the clubhouse, Meaker concentrated on the equipment.

The equipment included a 340 International, one Toro walking greens mower, a Walter Spiker, a Red Rider Truckster, a Smith Co. sprayer, a top dresser, a '65 Chevy pickup, a 1948 cub tractor, a seven gang and a five gang. The cub, pickup and 340 were frozen up and the radiators were busted. All mowers were in need of sharpening,

(continued on page 40)

Rogala Public Links — as Charlie Meaker found it in March, 1974.

people on the move

J. Martin Erbaugh, appointed manager of marketing research and legal counsel for The Davey Tree Expert Company.

* * *

Roger Doyle, joined Safe-T-Lawn, Inc., as district salesman for the northern California area.

* * *

R. B. (Rick) Halverstadt, joined sales organization of Griswold Controls, manufacturers of automatic irrigation valves and controls.

* * *

Richard (Dick) L. Hale, became editor of The Golf Superintendent, official magazine of the Golf Course Superintendents Association of America (GCSAA).

* * *

Dennis J. Maloney, named marketing manager, agricultural-horticultural products, Construction Products Division, W. R. Grace & Company.

* * *

Dr. Frank L. Carter, appointed research entomologist for the Gulf Crop Protection Products Department, Gulf Oil Chemicals Company. Carter will be responsible for the research and development of new insecticides, miticides, and fungicides.

* * *

ProTurf Division of O. M. Scott & Sons, appointed three new technical representatives: **Murray Nonhof,** northern California; **Gary Bateman,** northern Michigan; **Dick Gethin,** eastern Missouri.

* * *

Thomas M. McFarlin, appointed manufacturing manager of Davis Manufacturing Division of J I Case.

* * *

Wes Prosser, joined the agricultural chemicals advertising and public relations staff of the Agricultural and Veterinary Products Division of Abbott Laboratories.

* * *

Dr. William C. Zschoche, appointed western research and development manager for The Kalo Laboratories Division of Marion Laboratories, Inc. Zschoche will also head the research activities for growth regulators, herbicides and adjuvants. **Dr. Lynn W. Brookhouser,** appointed southern research development manager for Kalo. Brookhouser will conduct research on seed treatment products, bactericides and fungicides.

* * *

Ramon Parega, appointed vice president of engineering at Hypro Division, Lear Siegler, Inc. The division manufactures pumps for weed and pest control spraying, high pressure cleaning and general liquid transfer.

* * *

Dennis L. Bertelsen, appointed national sales director for consumer products in Toro's Outdoor Power Equipment Group.

* * *

Eliot Wadsworth II, appointed director of corporate development, American Garden Products, Inc. (ASE).

* * *

Gene C. Moore, joined Thompson-Hayward Chemical Company as an agricultural sales representative.

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"Hello, Mrs. Smith."

This is Chuck Cissel calling from Guardian Tree Experts. I stopped by your home the other day to check your trees as part of our preventive maintenance program"

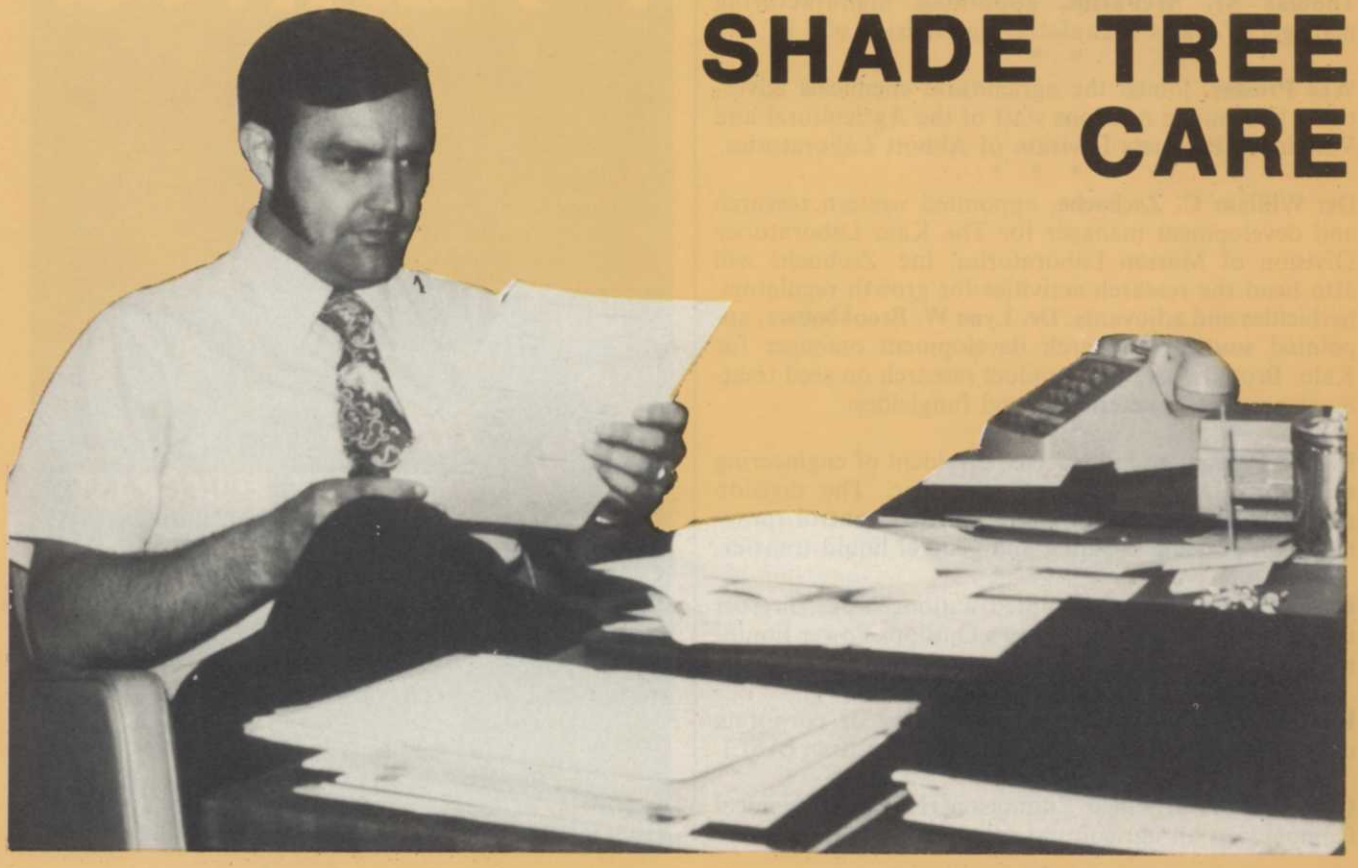
". . . Yes, your trees basically look fine. But I did notice a small buildup of tent caterpillars in the two wild cherries in front. I'd suggest that we spray them before the infestation becomes too large and starts damaging the foliage."

". . . We've used several products in the past. Malathion has given us good results and it is one of the best insecticides available. I'm sure you will be pleased with the results."

". . . Another item I might suggest is that it is time to feed your trees again. If you remember, we fed them three years ago, and at the time I mentioned that we would contact you in another three years. I'd advise spraying the tent caterpillars this week and feeding all your trees later this fall. That will give them continued nutrition for another three years."

". . . Fine, thank you. We'll have a spray crew over there Wednesday. Then we'll be back next spring to feed all your trees."

PRE-SELLING SHADE TREE CARE



THIS DIALOGUE is not uncommon. It goes on nearly every day at Guardian Tree Experts, a Maryland tree care firm serving metropolitan Washington, D. C. and surrounding counties. The conversation is built on the premise that homeowners are genuinely interested in keeping their shade trees and ornamentals healthy and free of insects and disease.

Woven cleverly throughout the dialogue is what Walt Money, president of the firm, describes as "finding out what people need and helping them to get it." This consists of pointing out a potential problem, reminding the client about tree nutrition, and generally looking after the short- and long-term maintenance of the homeowner's trees and ornamentals.

"We know that people love trees," says Money, "but few really know how to professionally care for them. Rather than wait for a panic situation or a costly takedown, I believe it is incumbent upon us as professional tree men to communicate the tree's needs to the client — not with hard sell tactics, but with a program of preventive maintenance or preservation principles.

"So early in our conversations we try to express to the homeowner that we are just as interested in his trees as he is. This reassures the client that he has made the right decision in hiring a professional tree care firm to handle the job. Then once this is established, we try to provide the most expert help available to solve the problem."

One of the techniques developed by Guardian Tree Experts is preselling this preventive maintenance program. It basically amounts to anticipating the need before the homeowner does and then educating him on what should be done. For some it may be cover sprays; others may need pruning and borer control; still others may need periodic insect control. Generally, however, Guardian Tree Experts attempts to presell the client on the tree's needs for one year.

How does preselling tree care work? "When we first started in business, we were quite aggressive," Money said. "We went out and knocked on doors, called prospective clients on the phone and wrote letters to solicit business. At that time, almost no job was too big for us.

"We kept good records on our clientele — a must if you plan to succeed — and after a time we began to note the trends that were occurring," he continued. "Much of our work each year was a repeat of the previous year. For example, we would spray for scale every year; bagworms and tent caterpillars could be predicted almost with regularity. Pruning deadwood from trees could be anticipated.

"We also discovered that too many tree men make the mistake of answering a call about a dead tree and just sell a removal," he said. "Too often when we'd go out on a job like that we'd end up asking ourselves: Why did the tree die? Are there others in danger? When were the trees fed last, if ever? What diseases and insects caused a weakening of tree vitality?

"Chuck Cissel and I put our heads together and decided that we could be of more service to our customers if we could educate them on the concept of preventive maintenance. We could then presell the work as much as a year or two in advance. The work would be easier to do and the customers we serve would more tangibly appreciate what we try to do for them."

That's the image that now greets the customer on the phone or at the front door — one of genuine interest in the homeowner's needs, one that educates the client on professional shade tree care.

Behind this is a team of dedicated experts who must be constantly on their toes. Walt Money, Chuck Cissel and the other two partners, Charlie Weaver and Al Butler, must be virtually walking storehouses of knowledge and information to professionally answer the myriad of questions and problems that arise daily.

Guardian Tree Experts maintains close contact with specialists at nearby universities. They receive and digest reams of information from USDA, state departments of agriculture, chemical manufacturers, and from other professionals in the field. In addition, membership in organizations such as the National Arborist Association and the International Shade Tree Conference provides a good cross fertilization of ideas and a personal stimulation to maintain a professional status within the industry.

Because the field is so large, the four principals have tended to specialize. Money handles problems involving disease control; Butler and Weaver concern themselves with general tree care; and Cissel has become an expert on insect control.

"I generally develop an insecticide program that utilizes products which will do the job with the least toxicity and the lowest cost factor," Cissel said. "We follow the product label carefully and never try to deviate or take chances.

"For instance, if we spray a client's trees for bagworms, I use malathion at the recommended rate. Why? Simply because it is recommended by university entomologists and it is labeled by the manufacturer to do the job. Plus, we've found it to be an excellent material with low hazard to the applicator and relatively low cost to the homeowner."

Close rapport with entomologists and others who monitor insect infestations permits an almost daily input of what is expected to occur throughout the season. Likewise, cooperating with chemical manufacturers in establishing tests for new products helps the firm keep abreast of developments in the future.

All this behind-the-scene work pays off, too. Not only for Guardian Tree Experts, but for the homeowner. Six big ornamental shrubs located in one section of Washington, D. C. provides a good case in point.

Guardian received a panic call from the owner where the shrubs had browned out and appeared to be dying. Initial examination showed nothing, but Cissel decided to take an entomologist from the University of Maryland to the area. After observing the situation, the entomologist concluded that it was the most acute case of leafminer he had ever seen.

After reviewing literature and product labels, Cissel sprayed the shrubs with CYGON 2-E systemic insecticide and injected nutrients. Six weeks later the shrubs were green and bushy. Leafminers were not visible and the shrubs looked healthy once again.

Left: Walt Money, president, Guardian Tree Experts, Inc., reviews the records of clients to determine their needs. He takes much interest in finding out what people need and then helping them get it.

"The owners were extremely pleased with the results," Cissel said. "As a result, I presold a couple of sprays for the next year because leafminer is prevalent in the area."

The key to preselling is knowing what your customer's needs are. The idea is not to take advantage of the client. You do this only once. Rather, you presell a preventive maintenance program that will build on itself, one which will aid and care for the trees. The whole concept of preventive maintenance then is geared to preventing expensive takedowns and the resulting loss of trees. Nobody wants to lose trees; the homeowner gains no enjoyment by a costly removal.

"In preventive maintenance your first concern is for your client and their trees," Cissel said. "Keep this foremost in your head and you will make money."

Preselling preventive maintenance has other advantages, too. It permits close scheduling of like jobs. The work for crews is not strenuous — no major equipment needed; tree accidents are fewer. (Guardian Tree Experts has employed women to work on the spray crew.) And preselling makes better use of available time.

"We've found that we could utilize our snow days in winter by preselling spring injections and spraying, both high profit items," Money said. "In fact, by using our records, we now can literally sell $1,000 an hour on the telephone in the wintertime when the snow is blowing."

The benefits of preselling preventive maintenance are working well for Guardian Tree Experts. Their clients are pleased with the concept. The tangible results show that homeowners need and want and appreciate professional tree care. Finding out what people need and helping them get it can be a profitable way of doing business. Walt Money sums it up this way: "Our interest in the preservation of the homeowner's trees is more than genuine. It is our source of business in the years to come."

This crew professionally sprays a large hedge for aphid and mite control with malathion. Care is taken not to spray vegetation which may be adversely affected by these environmental protection chemicals.

The large pine in the foreground is heavily infested with insects. Guardian Tree Experts personnel were called after much damage had already taken place. Sprays to control insects and foliar fertilizer sprays were recommended.

meeting dates

Metropolitan Shade Tree Conference, Lubber Run Recreation Center, Arlington, Va., Nov. 14.

New Jersey Federation of Shade Tree Commissions, annual meeting, Haddon Hill Hotel, Atlantic City, N.J., Nov. 16-18.

Turfgrass Short Course, Georgia Golf Course Superintendents Association, University of Georgia, Nov. 24-26.

New Jersey Turfgrass Expo '74, educational conference and trade show, Sheraton Poste Inn, Cherry Hill, N.J., Dec. 2-5.

Midwest Association of Golf Course Superintendents, 22nd annual turf clinic, Medinah Country Club, Medinah, Ill., Dec. 3.

Ohio Turfgrass Conference and Show, Franklin Co. Veterans Memorial Building, Columbus, Ohio, Dec. 3-5.

National Agricultural Aviation Association, convention/exposition, Las Vegas, Nev., Dec. 3-7.

Delaware Turfgrass Conference, John M. Clayton Hall, University of Delaware, Newark, Del., Dec. 9.

Sprinkler Irrigation Association, irrigation short course, Fresno, Calif., Dec. 10-12.

New England Chapter, ISTC, 11th annual meeting, Kings Grant Motor Inn, Danvers, Mass., Dec. 11-12

Western Association of Nurserymen, trade show and 85th annual meeting, Plaza Inn, Kansas City, Mo., Jan. 5-7.

Mid Atlantic Golf Course Superintendents Association, 46th annual education conference, Baltimore Hilton, Baltimore, Md., Jan. 6-7.

Tennessee Turfgrass Association, annual conference, Sheraton South Motor Inn, Nashville, Tenn., Jan. 6-7.

Penn-Del Chapter, ISTC, annual symposium, Marriott Motor Inn, Philadelphia, Pa., Jan. 8-9.

Kansas State Shade Tree Conference, K-State Union, Kansas State University, Manhattan, Kan., Jan. 9-10.

California Weed Conference, Sheraton Inn, Fresno, Calif., Jan. 20-22

1975 Arborist Seminar, Illinois Commercial Arborists and the Cook Co. Extension Service, Sheraton-O'Hare, Rosemont, Ill., Jan. 21.

New Jersey Recreation and Park Association, 9th annual symposium, Labor Education Center, New Brunswick Campus, Rutgers University, Jan. 21.

Southern Weed Science Society, 27th annual meeting, Sheraton-Biltmore Hotel, Atlanta, Ga., Jan. 22-24.

Rocky Mountain Regional Turfgrass Conference, Colorado State University, Fort Collins, Colo., Jan. 23-24.

Ohio Chapter, ISTC, annual meeting, Sheraton-Columbus Hotel, Columbus, Ohio, Jan. 26-27.

Associated Landscape Contractors of America, Inc., 13th annual meeting and trade exhibit, St. Petersburg, Fla., Jan. 27-31.

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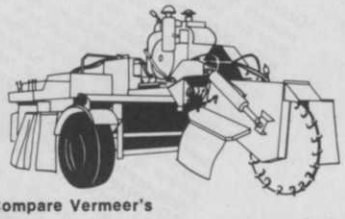

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In fact, the more difficult the project, the greater the advantages of drip irrigation seem. But even in such relatively simple landscape projects as park developments, golf courses and commercial buildings, drip irrigation also offers many distinct advantages.

Perhaps foremost among these is the amount of labor-saving automation that can be achieved through the installation of drip irrigation systems.

Importantly, this automation also allows for the mechanical metering of nutrients directly to plants through the drip irrigation line.

Water with a relatively high salt content can be readily used for drip irrigation.

Since water is applied directly at the base of each plant — instead of over a wide area, drip irrigation provides a substantial savings on water bills.

This water savings concurrently reduces weed growth between plants, since the distribution of the water is limited solely to a one to two foot ground area immediately surrounding each plant. And fewer weeds mean less weeding labor and chemical applications.

While still basically a new concept to landscape architects — even though the number and variety of installations is growing steadily, drip irrigation is an established concept in agriculture, with nearly 100,000 acres of high density crops currently being irrigated by drip irrigation systems.

Basically, whether used for agriculture or landscape applications, drip irrigation involves the placement of small, steady amounts of irrigation water to specific areas of concentration immediately surrounding individual plants. This basic concept has been utilized for many years in ornamental nurseries.

Drip irrigation can best be defined as the frequent or daily application of water drops to a specific area of the plant where the water enters the soil surface readily.

This water is discharged onto the soil from plastic devices called emitters that are installed into plastic hose lines running for lengths of up to 500 feet. The most commonly used hose is .580 in diameter. Where aesthetics dictate, these hoses can be installed underground — yet with above ground water discharge.

Anywhere from one up to four or more water emitters are placed into this hose line where it passes a plant. Each system is set up to provide specific amounts of water to individual plants, the most common amount being one gallon an hour during running periods. The purpose of increasing the number of emitters is to spread the distribution of water around the base of larger plants, rather than to increase the total amount of water applied to the plant. New plantings can be started with one emitter, and additional emitters added as plant growth dictates.

The water drips out of these emitters — literally drop by drop, onto the soil surface without disturbing the soil structure, so that the water can seep between soil particles. Once in the soil, the water moves by capillary to the surrounding areas.

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The fifth season is "Davey Season." It starts right now, as your trees are dropping their leaves. It lasts until the first spring buds appear. And it's the low-cost season for you to call Davey for a tree Service Survey.

We can make surveys and cost estimates — without obligation. We can help you plan your tree maintenance budget through the early months of 1975. Or, with civic and recreation areas less crowded and the busy summer over, we can give prompt attention to the immediate needs of valuable trees.

For work you need done immediately, our trained crews are ready with specialized equipment to plant new trees and remove dangerous old ones, to prune deadwood and large hazardous limbs from pedestrian paths, and grind down stumps to below ground level.

So make the fifth season your thrift season. Preserve the beauty and value of the trees in your care, and ensure public safety at an economical cost now. And avoid costly emergency work and overtime in the future.

Call your local Davey representative for help in organizing and budgeting your tree-service needs. He's in the Yellow Pages under Tree Service.

For landscaping needs, send for new catalog listing over 150 varieties of shade and ornamental trees, ranging from 2" to 10" in caliper.

DAVEY TREE

KENT, OHIO 44240

Coast to Coast and Canada

For More Details Circle (107) on Reply Card

The greens on Meaker's Rogala Public Links were ready for play in about two months, following an extensive mowing and fertilization program.

SKILL *(from page 32)*

and none of the equipment had been started or moved in two years. But by April, Meaker had it out on the course.

"The first thing I worked on was the greens," Meaker said. "I used a 30-inch Mott walking flail mower to take the greens from 18 inches down to an inch."

With a borrowed blower, Meaker blew the clippings off and mowed the greens again. The following week, a 30-inch reel mower trimmed the greens down to ½ inch.

"I started to burn the greens off, but a putting green on fire just didn't look right to me, so I put it out as quickly as I could," he said. "It was a good thing, too, because by July some of the burnt areas had not caught up with the rest of the green."

In mid April, greens height was dropped to 5/16 inch, and Meaker began applying 10-20-30 water-soluble fertilizer using 1¾ pounds of nitrogen per 1,000 square feet. Two weeks later, he applied Vertigreen 16-4-8 fertilizer, using 1½ pounds of nitrogen per 1,000 square feet. "I would have fertilized sooner," Meaker said, "but the soil temperature was too low."

While the greens feasted on their long overdue feeding, Meaker took a brush hog mower to battle with the rest of the course. He mowed the fairways from 2½ feet down to two inches, and borrowed a sweeper to remove clippings and give the grass a chance to grow.

"I used my seven gang to maintain a 2-inch cut for the next three mowings, then I dropped it down to 1¾ inches," Meaker said.

Miraculously, the course was ready for the grand opening on May 4, 1974, but Mother Nature decided to test the Meaker family a little further. More rain, added to what was already one of the wettest springs on record, put a damper on opening day. Rain continued to limit play throughout the spring, but by the middle of June as many as 70 golfers a day were testing the new Rogala Links.

With the course in play, Meaker's problems were by no means over. The nine holes added up to 35,000 square feet of greens, 28 acres of fairways, and 60 acres of rough. Even with good equipment and an ample budget for materials and labor, this would present a small problem to any superintendent. But Meaker had been blessed with neither, so most of the work had to be done by him and his family as economically as possible.

Meaker has a bit of advice for others who are contemplating similar ventures: "Before you can start this kind of a project, you must set up a budget and stick to it. Don't go overboard; pay as you go, or make sure you don't overspend. Also, you can plan on working 20 hours a day."

Most any superintendent can keep a course in top condition, given enough labor and resources. But when resources are limited and you're starting from scratch, it takes a highly skilled superintendent to bring a course through. Charlie Meaker has shown that skill, knowledge and hard work are still a superintendent's best tools.

3 BILLY GOAT
Indoor/Outdoor Vacuums

BILLY GOAT
INDUSTRIES, INC.
P.O. BOX 229
GRANDVIEW, MISSOURI 64030

One man with a Billy Goat becomes a big clean-up crew. BG 60 is available in self-propelled and push models, with gasoline or propane engine, or batteries. For all models—optional intake hose for hard to reach areas.

Model	HP	Snout width	Blower housing	Application
BG 60	8	30"	Steel	Industrial
BT 70	8	30"	Steel	Grounds, park
KD50	5	26"	Steel	Lawns, drives
KD35	3½	26"	Steel	Lawns, drives

For More Details Circle (118) on Reply Card

Marines Use Effective New Weapon

Fewer Weeds, Better Drift Control

By ROBERT E. EDDY

IF YOU'RE in charge of grounds maintenance for a 5,000-acre U.S Marine air station, there are lots of reasons why you don't want the place to become overrun by weeds.

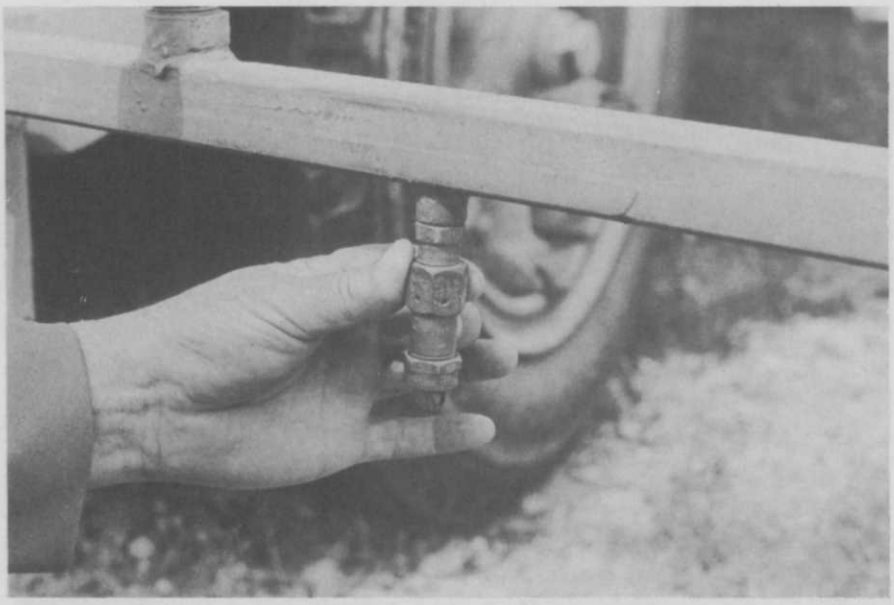
But being the general foreman of public works, General Services Branch at El Toro Marine Air Station, El Toro, Calif., I have some special reasons.

For one thing, we have a terrible problem with Russian Thistle — commonly known as tumbleweed. In the past, with the heavy prevailing winds we have here, we've had them stack up against the heavy hurricane fence that surrounds the bases and simply push it over.

Also, weeds kill off the oats and barley we've planted to help prevent erosion. We're on a gentle, four percent grade here, and we have lots of asphalt runways and aprons from which there's a great deal of run-off during and after rains. We have to maintain good, thick ground cover to prevent serious gullying, which would be a terrible hazard in the case of force landings — both to the airplane and emergency vehicles.

If we didn't have a good weed control program here, including spraying and mowing, the weeds would be shoulder high in no time. And this would bring another

(continued)



Close-up of an Accutrol nozzle shows the unit's size compared to the man's hand.

This sprayer is operating along a roadway bordering the air base in El Toro, Calif. Across the road, behind the chain-link fence, is a field belonging to a large nursery. Prevailing winds blow from the base towards the field, thus making spraying with 2,4-D a tricky operation. The foamy mixture on the gravel next to the roadway is evidence of the foaming action of the Accutrol nozzle.

problem — forced-down pilots being hit by emergency vehicles after bailing out successfully.

It might sound simple — just mow and spray at will, as needed But there are a couple of "flies in the ointment."

Mowing is quite expensive, particularly with breakdowns and regular equipment maintenance, but that's not the most serious problem we've been faced with. What really confounded us here for a time was spraying with 2,4-D and other chemicals, when we're almost completely surrounded by nurseries specializing in ornamental trees and plants, as well as truck gardens full of oranges, tomatoes, strawberries, peppers grapes, cabbages, lettuce and beans, to name a few.

Up until now, spraying has been a real problem because of the problem of drift. Everything around us is sensitive to 2,4-D, so we've had to start spraying at the break of dawn and quit before 9 a.m., before the prevailing winds get too strong. We couldn't cover much ground and had to resort to slower, more costly mowing procedures.

My crews and I have recently found at least a partial solution to the drift problem in switching to a new nozzle developed by the Velsicol Chemical Corp., Chicago, Ill. Called Accutrol, the nozzle mixes air and a sticky adjuvant solution with the herbicide mixture, resulting in a fan-shaped pattern of large droplets rather than a fine mist, which is susceptible to drift.

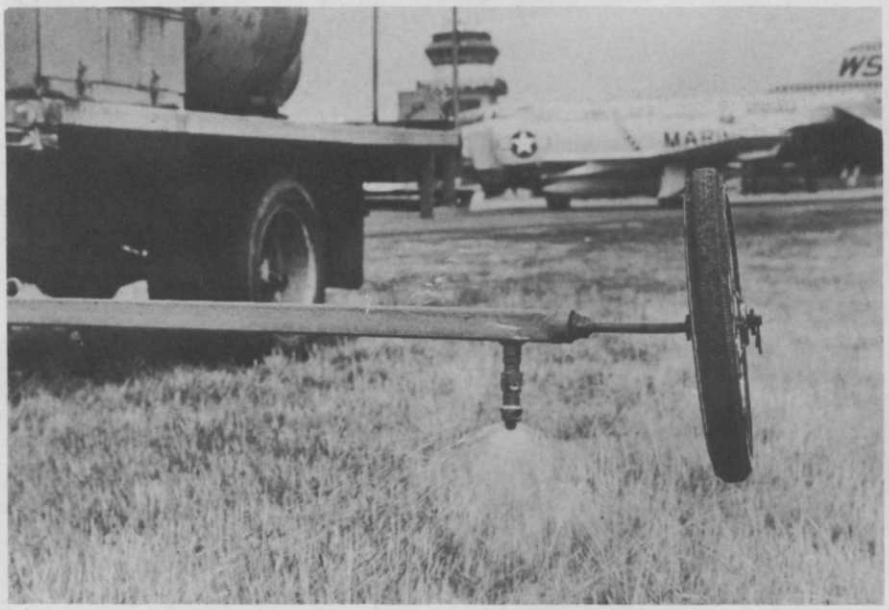
Now we're able to spray from early morning until at least noon. This has allowed us to mow at least one less cycle per year, which saves on labor and all the other attendant costs of mowing. Labor savings alone amount to about $3,600 a year.

Other savings have accrued from the Accutrol spray system itself. Since so little is wasted through drift, my crews estimate we're saving as much as 500 gallons of herbicide solution a day — and that adds up to a lot of dollars saved, and lots more weeds controlled.

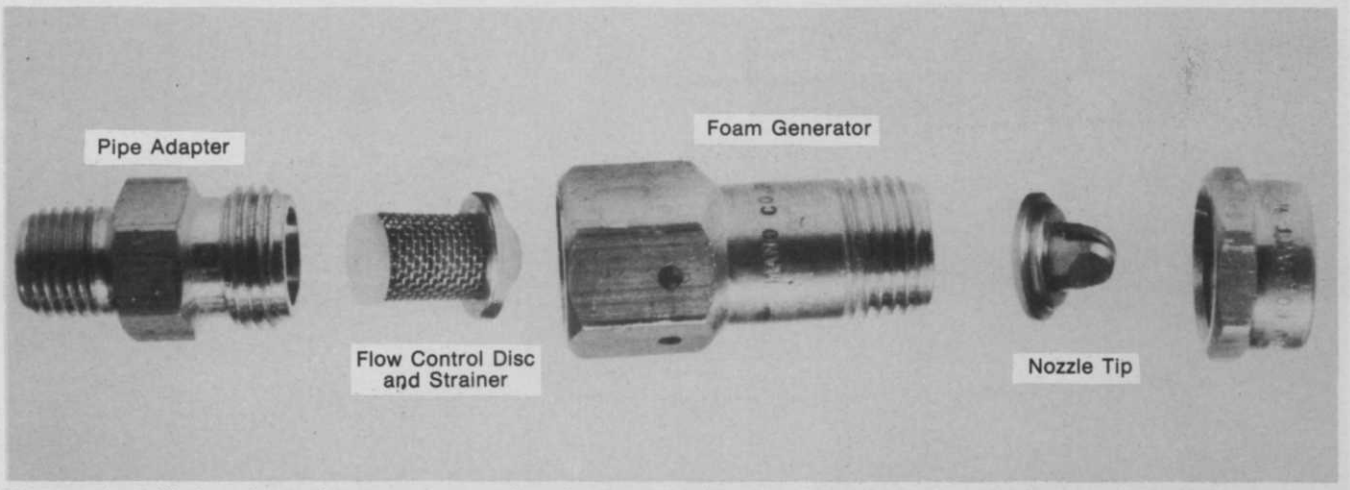
We've achieved very good control of our most serious weed problems using the new nozzle. This includes all the common broadleafs such as pigweed, as well as the tumbleweed, tumbling mustard, puncture vine and yellow star thistle.

Out of the 5,000 acres which comprise the air base grounds, my department sprays about 1,500-plus acres. We use a mixture of 2,4-D plus Doluran plus four pounds Amino.

I have a staff of four who handle the spraying and mowing operations. Their equipment includes four 15-ft. rotary mowers, a 1,000-gallon water truck with 20-ft. boom and a 150-gallon sprayer for small, irregular areas. The large truck boom has 15 nozzles, but the spray pattern of the Accutrol nozzles requires only seven of these be used at 48-inch sprayings.



A close-up of the Accutrol nozzle in use shows the fan-shaped pattern made by large droplets as they spray from the unit's tip.



This "exploded" view shows the components of an Accutrol nozzle used by El Toro Marine Air Station. From left to right: the pipe adapter, by which the nozzle is connected to the boom; the flow control disc and strainer, which increases velocity of the spray, thereby decreasing pressure and allowing air to be pulled in through air intake holes in the next component — the foam generator. In the foam generator, air and chemical solution is mixed into a frothy "air emulsion." The nozzle tip and nozzle nut are shown at the far right.

PLAN TO ATTEND NOW!

gcsaa

46TH INTERNATIONAL TURFGRASS

conference and show

FEBRUARY 16-21, 1975
NEW ORLEANS

THE RIVERGATE – Showcase of the Turfgrass industry, where superintendents come to look, compare and learn.

"PREPARING FOR CHANGE . . . TOGETHER," this year's Conference and Show theme capsulizes the week's activities, which begin with Pre-Conference Seminars and conclude with a tour of turfgrass facilities. Educational assemblies, ranging from large, general sessions, to small specialized groups, will involve the golf course superintendent in new areas of information and interest.

CONFERENCE HIGHLIGHTS

- Pre-Conference Seminars
- Certification Examinations
- General Education Assemblies
- Special Interest Sessions
- Turfgrass Industry Show
- Annual Meeting & Election
- Turf Tour
- Ladies' Program
- Social Events
- Golf Tournament

Sponsored by the

GOLF COURSE SUPERINTENDENTS ASSOCIATION OF AMERICA

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Send in for your registration form now. By registering in advance you will save time at the registration desk in New Orleans, where a distinctive badge and your other conference materials will be awaiting your arrival.

Last Name _____ First Name _____

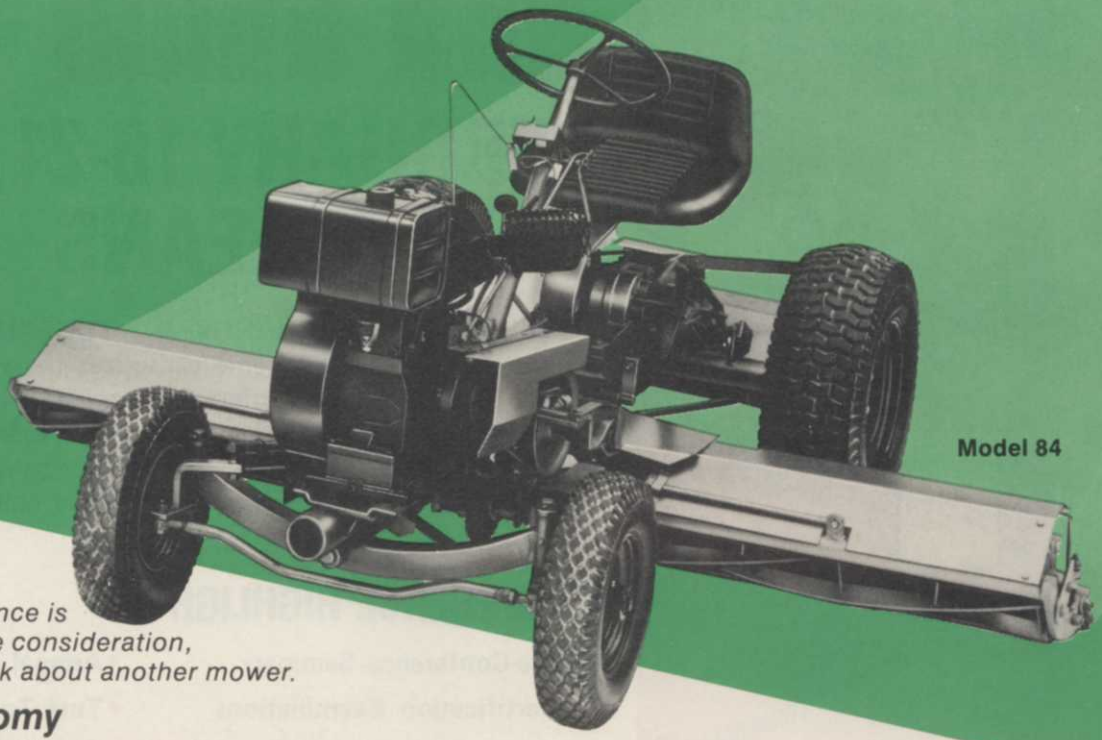
Mailing Address _____

City & State _____ Zip Code _____

Club or Firm _____

For More Details Circle (116) on Reply Card

Ugly, but Economical!



Model 84

If appearance is your prime consideration, better think about another mower.

If economy and quality is what you want— you want a National Mower!

In today's economy, one of the most difficult engineering tasks is to produce a completely functional and easily maintainable machine with a minimum number of components. *We've been doing just that since 1919.*

In addition, we skimp on styling in order to lower initial price and to build mowers that give you years of extra service.

Rather than adding fancy shrouds, shiny hubcaps and frills, we concentrate on providing mowers with maneuverability and superb performance on banks and hillsides. For better quality, we use Timken bearings; automotive-type transmissions and heavy-duty, tubular steel frames. Reels adjust down to fixed bed bars providing for more rigid and longer lasting mowing units. Bed knives have turned up lips for extra wear... *a feature we introduced as early as 1925.* For professional results, National's three power-driven, free-floating reels follow ground contour and cut without skip or scalping.

Chrome accent strips don't add to serviceability, so we don't use them. National's no-nonsense design makes normal service faster than any mower on today's market.

Check out the economies of these ugly beauties... we've been adding nothing but quality since 1919.

Model 68

WRITE for detailed literature on all National Mowers

NATIONAL MOWER

NATIONAL Mower Company

660 Raymond Avenue • St. Paul, Minnesota 55114
Phone: 612/646-4079

For More Details Circle (106) on Reply Card

WATER *(from page 30)*

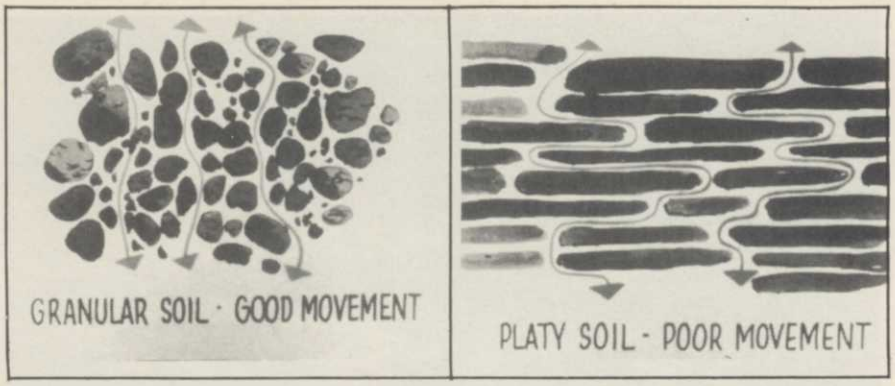
Ways have been found to add water at a moments notice to anyplace on a golf course. No longer are we completely dependent on nature's rain for the moisture that's needed.

We run 1,000 pound golf cars over the turf and the golf traffic has doubled and redoubled. Now in the '70's, we hear of "turf failure," "It's too hot or too wet to grow grass here," ". . . can't stand the traffic," "*Poa annua* has invaded and the turf fails every year."

We have all become product-oriented through advertising. When we see weeds invade the turf, we know from advertising that the solution is applying a selective herbicide. If disease attacks the turf, we know the solution is applying a specific or a broad spectrum fungicide. I do not suggest that turf managers do not need the herbicides and fungicides as tools and I sincerely believe that most of the herbicide and fungicide manufacturers do not promote their products as "cure-alls." But, did you ever wonder why the weeds or disease took over? Is there some agronomic practice that we might utilize to improve the health of the turf overcome some of these problems in addition to the herbicides and the fungicides?

We are accustomed to hearing about Labor Budgets, Capital Improvement Budgets and Maintenance Budgets. How many turf managers use "Water Budgets"? Do you anticipate that inch rain? Plan to have excess water run directly into surface drops and not soak into the soil. Have you left room in the root zone for a half inch rain to be absorbed and not saturate the soil?

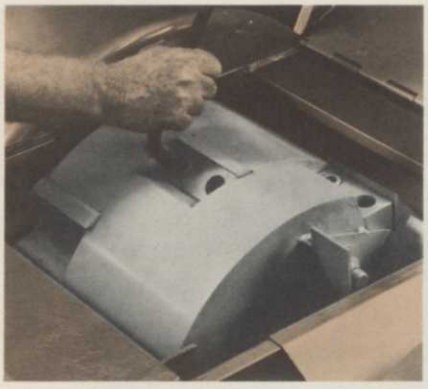
I agree with John Morley that air in the soil is more important than water during hot weather; with Dr. Daniel, that the condition of the top inch is critical to successful turf growth; with O. J. Noer, that a mismanaged water budget causes turf failure; and with Dr. Beard, for he was looking in the right place for the answers to successful turf growth, **If you can't grow roots, you won't grow grass.** The water and air relationship in the root zone is probably the most important relationship to understand in successful turf management. I hope you have gained a renewed understanding of turf and the micro-climate and the role which water plays.



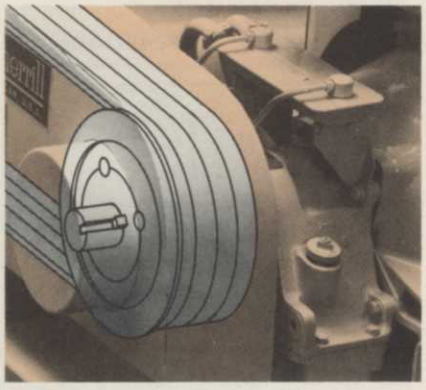
Soil condition plays an important role in the air-water-soil relationship. Granular soil has good movement of water and air, but in compacted soil, the movement is poor.

Mitts & Merrill Brush Chippers For... better design... more efficiency

For more than 115 years Mitts & Merrill has been making specialized machinery for industry. A major part of our business is equipment to reduce scrap and waste. This experience is incorporated into design features on our brush chippers that result in higher efficiency and longer, trouble-free service for you. Only Mitts & Merrill brush chippers offer features like these:



Staggered knife pattern for smoother cutting action. Mounted on an all-steel cylinder that, even without an external flywheel, is heaviest in the industry. Each cylinder revolution gives more cuts, produces smaller chips of uniform size. Self-adjusting knives are reversible; give twice the service between sharpening.



Optional torque converter isolates engine and transmission from cutting shock to minimize maintenance. Makes operation virtually fully automatic; increases operator productive time. Available on all models.

• **Positive safety-lock pin** for greater operator safety • **Swing-away, folding feed chute** protects cutting chamber; allows instant access and increases maneuverability • **Heavy duty construction** includes coil spring, torsion-type suspension, and box tubular steel frame.

mitts & merrill — subsidiary walco — Walco National Corporation

Dept. WT 96, 109 McCoskry St., Saginaw, Michigan 48601

International Harvester's comprehensive line of construction and industrial equipment.

International Merges Equipment Lines

A merger of International Harvester's construction equipment and industrial equipment divisions was announced recently at a national press conference at Lake Geneva, Wisconsin. The new division was christened Pay Line.

The new division places both lines of equipment into one marketing organization under a single divisional structure, said Ben H. Warren, International Harvester group vice president.

"It gives International the broadest, most comprehensive line covering the important construction and industrial equipment markets," Warren said.

The Pay Line division includes such varied products as a small 25 HP utility tractor and a 495 HP twin-engine scraper, plus excavators, all-wheel-drive off-highway rear-dump haulers; twin engine and single engine, open bowl and elevating scrapers; crawler loaders; forklifts; industrial and automotive diesel and carbureted engines; and airplanes-towing movers.

A new line of equipment and improvements was featured at John Deere's dealer-oriented product show in Waterloo, Iowa. The 1975 models included tractors, mowers, chain saws and complementary equipment. The new units ranged from home lawn and garden tractors to heavy-duty riding mowers, some with commercial applications. Deere also briefly introduced forklifts and front-end loaders along with the complete line of consumer work and leisure products.

Cushman/Ryan Grant Aids Turf Grooming Study

Aided by a grant from Cushman and Ryan turf care equipment, a 22-year-old Tacoma, Wash., student is working towards a master's degree at Purdue University, Lafayette, Ind.

John Roberts, who received an undergraduate degree from Washington State University, is in the first year of a two-year program to earn an M.S. in agriculture from Purdue. His thesis subject is cultivation and grooming of turf.

In working towards his degree, Roberts will study and report on the effects of Cushman and Ryan turf care equipment on putting greens, tee-boxes and golf course fairways. He also will test the equipment on residential lawns.

P.A.T. (from page 16)

The coach said, "We tested the field under the most difficult conditions. It had rained for 24 hours, but it was just like playing on a dry field."

Following the game between Purdue and Wisconsin, Badger coach John Jardine said, "Any team not now having artificial turf should seriously consider this (PAT) system."

The Future

The concept becomes reality. Six fields are installed. The national license, Prescription Athletic Turf, Inc., of Lansing, Mich., has garnered experience and established contacts. The corporation is equipped to promote, design, coordinate, install and guarantee.

Interest in the system has developed regarding Kennedy Stadium in Washington, D. C., the New York Giants' home-to-be in New Jersey, the Mile High Stadium in Denver, the Lansing, Mich., school system, Notre Dame University, Ferris College in Michigan and others.

Uniform suction transmitted to the surface from pumps, collectors, drains, sand and topmix is the key. Without mud and slippage, natural turf can take more wear. Meanwhile maintenance is standard and offers more freedom in actual timing turf operations.

YORKTOWN: Lofts Pedigreed Seed, Inc., Bound Brook, N.J.

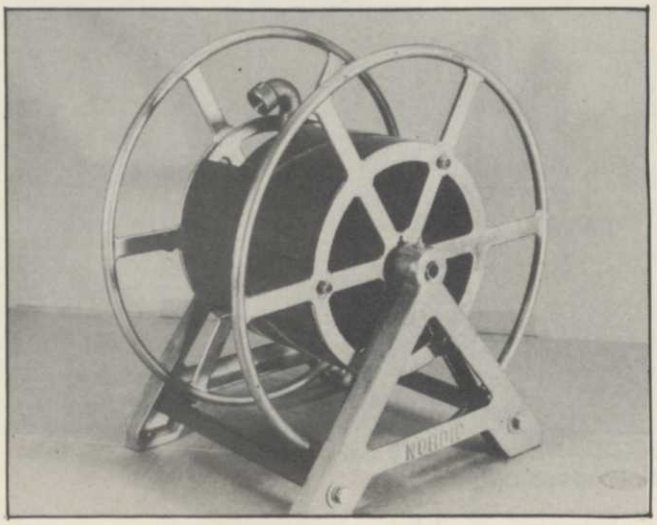
Yorktown, Loft's new turf type perennial ryegrass, will soon be available to professional turf managers. The new variety is said to be an extremely rugged perennial ryegrass that can take unusual stress. One outstanding feature, according to manufacturer, is its excellent mowing characteristics. When independently tested against 15 other varieties of perennial ryegrass, Yorktown is said to have scored highest for overall quality and coloring. Seed for testing purpose is currently available. For more details, circle (701) on the reply card.

STUMPRAZOR: Hesston Corporation, Indianapolis, Ind.

Hesston's new StumpRazor features six individual cutting teeth on a rotating head which shave stumps down to 6 inches below the ground. Safety shields protect operator from debris. This one-man method for removing any size tree stump less than 5 inches above the ground eliminates chopping, sawing and digging. Powered by an 8 hp Briggs & Stratton engine, StumpRazor features welded box fram construction. Replaceable cutting teeth are made of a tungston-carbide alloy. For more details, circle (702) on the reply card.

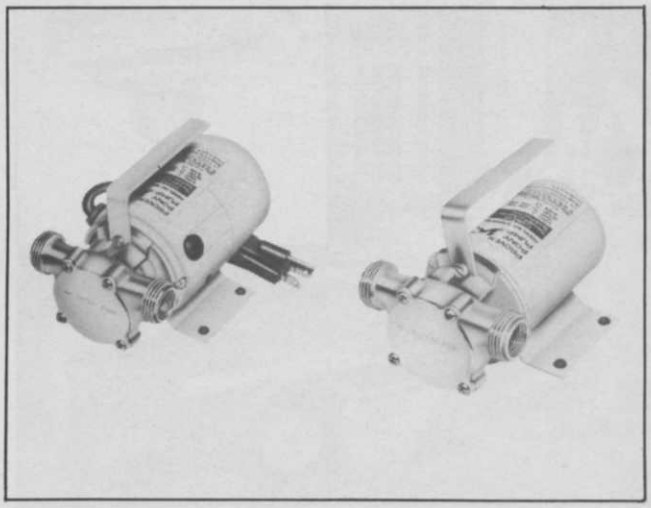
HYDRAULIC PISTOL GRIP SAW: Limb Lopper, Santa Fe Springs, Calif.

Limb Lopper has introduced a new hydraulic pistol grip saw to its line of power tools. The Mark II Model PGH saw weighs under six pounds. It features a comfortable pistol grip and a sturdy stabilizing handle. Several bar lengths are available: 12-inch, 15-inch, and 18-inch. The four horsepower vanetype motor puts out 4,300 rpm and will work on either open or closed hydraulic systems. For more details, circle (703) on the reply card.



CHEMICAL SPRAYING HOSE-REELS, H-70 and H-71: Nordic International, Mississauga, Ontario.

Designed for weed spraying, these reels have lightweight permanent molded 20-inch diam. aluminum heads and cast aluminum frames. Capable of handling up to 200 ft. x 1 inch hose, reels weigh about 37 lbs. Feature bronze swing joints of ½, ¾, or 1 inch, with Vitor o-rings and are pressure tested to 3,000 lbs. Available in hand, electric or air motor rewind. For more details, circle (704) on the reply card.

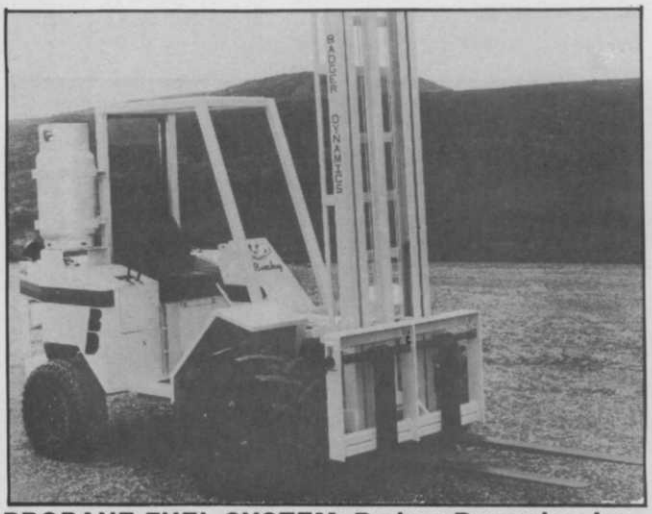


SELF PRIMING 360 GPH PUMPS: Proven Pumps Corporation, Los Angeles, Calif.

Available in AC Series, models 3MPUB-115 (solid brass) and 3MPUP-115 (high density polyethylene) move up to 360 gallons per hour, yet weigh only 5½ lbs. Both are available in battery-powered 12-volt versions. DC units are ideal for field application where AC power is unavailable. Impellers are made of Nitrile, compounded for long flow life, and resistant to oil, water and abrasion. Full circle cam elimiates body wear. AC unit has continuous duty series type motor with stainless steel shaft. DC unit has enclosed permanent magnet motor. For more details, circle (705) on the reply card.

MODEL MF FLAT-BED TRAILER: Clark Equipment Company, Michigan City, Ind.

Clark has introduced a flat-bed mini-trailer for pick-up trucks that can decrease equipment investment and increase operating flexibility for light, bulky hauling by freeing costly truck tractors for heavy loads, according to manufacturer. Inverted fifth wheel mounted under the "gooseneck" couples to a 2-inch SAE kingpin that folds into the pickup floor when not in use. Model MF is available in 22- and 30-foot lengths and features optional side rails for the drop deck area. For more details, circle (706) on the reply card.



PROPANE FUEL SYSTEM: Badger Dynamics, Inc., Port Washington, Wisc.

An optional propane fuel system for Bucky rough terrain forklift truck is now available from Badger Dynamics, Inc. Bucky is designed for applications in material handling for construction, industry, agriculture and commercial markets. Manufacturer says new 33 lb. propane tank provides Bucky with three to five hours of operation before refueling. Capacity for propane machine remains the same as the gasoline-powered counterpart — 2500 lbs., with roller type mast reaching to 14 feet as standard. Low profile mast is optional. For more details, circle (707) on the reply card.

MINI-HAUL: Schneider's Welding & Manufacturing, Inc., Menomonee Falls, Wisc.

Mini-Haul, with its low profile, compact width, short overall length and power articulated steering provides easy maneuverability, according to manufacturer. Traveling on 12-inch-wide flotation turf tires, it is said to cause no rutting or damage to turf. Several bucket designs are available, and dump angle of 110 degrees facilitates dumping. Mini-Haul is provided with 4-wheel hydrostatic drive and a 4 cyl. 46 hp ohv gasoline engine, and has a travel speed of up to 12 mph. All weather cab is available. For more details, circle (708) on the reply card.

classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: All classifications 50¢ per word. Box number, $1. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

FOR SALE

DOUBLE EDGE sod cutter blades. Will fit any Ryan sod cutter. Works like double edge razor blade. Cuts much more sod per blade. Made to bolt on both ways. $24.00 plus postage. New automatic sod loaders for direct loading to pallets, trucks or trailers. No workers needed on ground. Both products developed and designed by Hadfield. Write or call Glen Hadfield, 4643 Sherwood, Oxford, Michigan 48051. Phone 313 628-2000.

ARPS stump cutter teeth, top quality and best price in U.S.A., D. J. Andrews, Inc., 17 Silver St., Rochester, New York 14611. Call 716 235-1230.

USED EQUIPMENT

FOR SALE: Sprayers: used and new; hydraulic and mist, all makes; Royal 20, 35, and 55 pumps. Used rotomist parts, big discount! Phone 313 665-5338 or 313 994-3110. Write: Ralph McFarland, 209 Pleasant Place, Ann Arbor, Michigan 48103.

SOD FARM EQUIPMENT, 4 row sod planter, 8 row sod planter, 2 sod wagons, 6' weed chopper (Devil Catcher), 10' Howard Rotavator, cross cutter, 2 fork lifts, 400 gallon Hudson spray wagon, and more. W. B. Cowart, Belle Glade, Fla. 33430. Phone 305 996-3652.

FOR SALE: 2 Ryan heavy duty sod cutters with automatic cut-offs and roller attachments. Used one (1) year. Good condition. $1250.00 each. Complete inventory of parts also for sale. Maricopa Turf, Inc., P.O. Box 1062, Casa Grande, Arizona 85222. Phone (602) 836-8246.

1969 1½ TON CHIPPER TRUCK in perfect condition with walk through tool box, real sharp, a bargain at $3900. Lester Mead, 1635 Elmwood, Kansas City, Missouri 64127. Phone 417 483-3490.

SEEDS

SOD QUALITY Merion Seed for discriminating growers. Fylking, Delta, Park, Newport, Nugget, Adelphi, Cheri, Glade and Baron bluegrasses as well as fine fescues. Also Manhattan fine leaved rye grass. We will custom mix to your specifications. Michigan State Seed Co., Div. of Vaughan-Jacklin Corp., Grand Ledge, Michigan 48837. Phone No. 517 627-2164.

HELP WANTED

TREE CARE SALES REPRESENTATIVES: The Davey Tree Expert Company has openings for Sales Representative in the southeast and mid-Atlantic Coast area. Must have Jr. College or four year degree and/or four to six years of sales experience in tree care or allied fields such as nursery, landscaping, forestry and retail garden stores. Will train the sales-oriented person who will be on salary. Later salary plus bonus arrangement with unlimited earnings for those who can sell our quality service. Write letter of application with resume to R. J. McCafferty, The Davey Tree Expert Co., 117 S. Walter, Kent, Ohio 44240. An equal opportunity employer.

DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc., and you have our story. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

INDUSTRIAL WEED CONTROL — Immediate opening for an industrial weed control sales-service representative. Duties: sell weed control contracts during the winter months; service the same accounts during the balance of the year. A knowledge of soils, weed species and herbicides would be desirable. Salary based upon experience. Excellent fringe benefits. Send resume to: Dave Bassler, Western Soil Management, 1048 Route No. 22, Mountainside, New Jersey 07092.

IRRIGATION TECHNICIAN Sales, service, design of irrigation systems and pumping plants. Prefer individual with at least basic background in electronics. Salary commensurate with experience. Please contact H. G. Burkhardt, Lakeshore Equipment & Supply Co., 10237 Berea Rd., Cleveland, Ohio 44102.

WANTED: Tree Trimmer, with three years minimum experience in trimming around electrical distribution lines. Salary: Open. Apply to: City of Miami, Utilities Superintendent's Office, 129 5th Ave., N.W., Miami, Oklahoma 74354.

MISCELLANEOUS

TREE APPRAISALS, Surveys, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact: Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

ESTABLISHED POWER EQUIPMENT representative seeks additional lines and Allied products for eastern Pennsylvania, New Jersey, southeastern New York, and Connecticut. Distributor following. F. X. Martin, Sitweed Rd., Levittown, Pa. 19056.

POSITION WANTED

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With more than three and one-half months of production still to come, Walbro Corporation of Cass City, Mich. produced its 1,000,000th chain saw carburetor of the year in early September. There to give his team a hearty "well done" was Walbro President Walter E. Walpole (center), accompanied by C. Clark Boylan, vice-president, carburetor sales (right) and James Peyerk, final assembly foreman.

trimmings

If you thought puberty was rough . . . an insect theory that larva hibernation is caused by the juvenile hormone is the subject of research conducted by a University of Missouri-Columbia's Agricultural Research Station entomologist. Dr. G. M. Chippendale, who developed the theory, was recipient of a National Science Foundation two-year grant of $51,800. He explained that the hormone is secreted from a gland inside the insects' head and prevents them from maturing. This hormonal function could be exploited in future insect control practices, he said.

South of the border, PS Construcciones SA has been appointed Toro distributor in Mexico. The company, headquartered in Mexico City, will handle all Toro products and maintain a parts warehouse and service facility. According to a company official, this is Toro's first full-line distributor in Mexico.

Market Facts, Inc.'s Center for Quantitative Sciences was awarded a government contract for development of a consumer safety education program for outdoor power equipment including power mowers, garden tractors, snow throwers, chain saws and hedgetrimmers. U. S. Consumer Product Safety Commission awarded the grant.

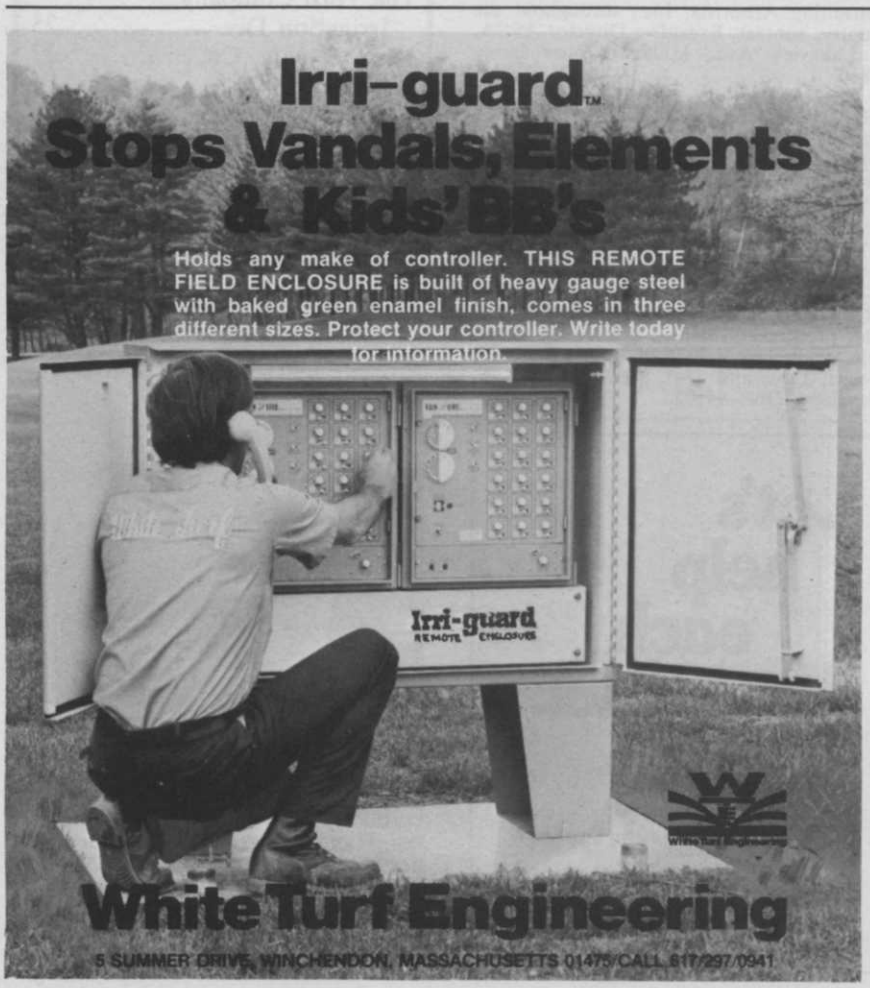
The second volume of a 5-volume series of the metric system dealing with legislation and regulatory controls is now available from the J. J. Keller and Assoc., Inc. METRIC SYSTEM GUIDE — VOLUME II can be obtained, from the publisher, for $59.00 each. For more information contact J. J. Keller, 145 W. Wisconsin Ave., Neenah, Wisconsin 54959.

New housing starts have shown a sharp drop this year due to scarcity of mortgage money, high interest rates and other inflationary problems. "There is a strong correlation between housing starts and sales of industrial tractors," said John E. Mitchell, executive vice president, Americas for Massey-Ferguson. "When housing starts to go up or down, sales of industrial tractors reflect this rise or fall some six months later." Mitchell spoke at the 81st annual convention of the Farm and Industrial Equipment Institute in Orlando, Florida.

Smelling like a rose were a number of staff members at Rutgers University involved as expert witnesses in a case in which a group of Cherry Hill, New Jersey residents took action against the township. It seems a sanitary landfill owned by the township produced decomposition gases which moved laterally underground and resulted in the death of many trees and shrubs on adjoining private properties. The staff's tests found extreme amounts of explosive gases, over 15 per cent carbon dioxide and zero oxygen in the soils where the vegetation was dead. Based on their testimony, the plaintiffs won a out-of-court settlement of $60,000 for damages and nuisances caused by the landfill.

Now we've heard it all. Floratam, a somewhat misleading name for a new variety of St. Augustine grass, appears not only to resist chinch bugs but actually fights back by killing many of the bugs that attack it. The new variety is being released jointly by the University of Florida and Texas A & M University. "The chinch bug resistance is really a fringe benefit. Floratam is the result of efforts to find an improved variety of St. Augustine grass to combat SAD (St. Augustine Decline), a virus disease which has destroyed lawns in Texas and is now spreading into other areas," explained Dr. Albert Dudeck, associate professor with the Institute of Food and Agricultural Sciences at Florida. In confined tests more than half the chinch bugs that fed on Floratam died, but it is not known what makes the grass unpalatable to the pest. It is thought, however, that the grass interferes with the life processes of the bugs in some way.

Not a kit but a new brochure, detailing steps for community-built golf facilities has been published by the American Society of Golf Course Architects. It includes information on research, costs, site selection, financing and other important aspects of planning and building a municipal course. For a copy of the brochure, write American Society of Golf Course Architects, 221 N. LaSalle St., Chicago, Ill. 60601.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